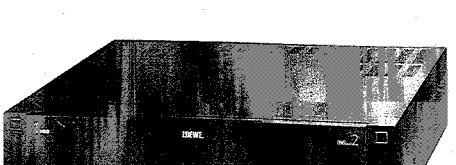
LOEWE.

Kundendienst-Serviceanleitung



VHS
PAL SECAM
Hi 8

VHS / Hi 8
OC 2508 M
Videorecorder
Art.-Nr. 52550

Sicherheitsvorschriften

Bei Reparaturarbeiten an den Geräten sind die Sicherheitsbestimmungen gemäß VDE 0860 und Nachträgen zu beachten und einzuhalten.
Spezielle Bauteile in den Geräten dürfen aufgrund ihres Aufbaues nur durch Originalteile ersetzt werden. Außerdem sind die am Reparaturort gültigen Schutzbestimmungen der Bundesgenossenschaft beim Umgang mit diesen Geräten einzuhalten. Hierzu gehört auch die Beschaffenheit des Arbeitsplatzes.
Die Kenntnis dieser Vorschriften ist die Voraussetzung, um einen fachgemäßen Service der Geräte durchführen zu können.
Bei Betrieb dieser Geräte im Ausland sind die jeweiligen Schutzbestimmungen des Landes zu berücksichtigen und einzuhalten.

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine LOEWE replacement parts.
   Especially critical parts in the power circuit block should not be replaced with other makes.
2. Before returning a repaired unit to the customer, the service technican must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

Norme die sicurezza

Effettuando dei lavori di riparazione sugli apparecchi bisogna osservare e rispettare le disposizioni di sicurezza a norma VDE 0860 e appendici.
Componenti speciali negli apparecchi vanno sostituiti, causa la loro composizione, solo con ricambi originali. Vanno inoltre rispettate le disposizioni di sicurezza dell'ente di assicurazione contro gli infortuni sul lavoro in vigore nel luogo di riparazione. Cio vale anche per le condizioni del posto di lavoro. La cognizione di tali norme costituisce la premessa per poter effettuare un'assistenza tecnica a regola d'arte.
Impiegando gli apparecchi all'estero occorre rispettare ed attenersi alle norme di sicurezza del rispettivo paese.

Loewe Opta GmbH.
96305 Kronach - Postf. 15 54.
96317 Kronach - Industriestraße 11.
Telefon (0 92 61) 9 90 - Telex 642 620.
Telefax 0 92 61/9 94 13.
Telegramm loewevideo.
Bildschirmtext *50705 # (Info).
*50705990 # (ET-Best.).

230-90260.950

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SECTION1 SUMMARY

KEY TO ABBREVIATIONS

A	AC	: Alternating Current
	ACC	: Automatic Color Control
	ADJ	: Adjust
	A/E	: Audio Erase
	AFC	: Automatic Frequency Control
	AFT	: Automatic Fine Tuning
	AGC	: Automatic Gain Control
	ALC	: Automatic Level Control
	AM	: Amplitude Modulation
	AMP	: Amplifier
	ANT	: Antenna
	APC	: Automatic Phase Control
	ASS'Y	: Assembly
	AUD	: Audio
	AUTO	: Automatic
	AUX	: Auxiliary
B	B	: Base
	BPF	: Bandpass Filter
	BW or B/W	: Black and White
C	C	: Capacitor, Chroma, Collector
	CAN	: Cancel
	CAP	: Capstan
	CATV	: Cable Television
	CBA	: Circuit Board Assembly
	CCD	: Charge Coupled Device
	CFG	: Capstan Frequency Generator
	CH	: Channel
	CHROMA	: Chrominance
	CLK	: Clock
	CNR	: Chroma Noise Reduction
	COMB	: Combination Comb Filter
	COMP	: Comparator Composite Compensation
	CONV	: Converter
	CS	: Chip Select
	CST	: Cassette
	CTL	: Control
	CUR	: Current
	CYL	: Cylinder
D	D	: Drum, Digital, Diode, Drain
	dB	: Decibel
	DC	: Direct Current
	DEMOD	: Demodulator
	DET	: Detector
	DEV	: Deviation
	DHP	: Double High Pass
	DIGITRON	: Digital Display Tube
	DL	: Delay Line
	DOC	: Drop Out Compensator
	D/V	: Dummy Vertical
E	E	: Emitter
	EE	: Electric to Electric
	EMP	: Emphasis
	EP	: Extended Play
	EQ	: Equalizer
	ES	: Electrostatically Sensitive
F	F	: Fuse
	FB	: Feed Back
	FBC	: Feed Back Clamp
	FE	: Full Erase
	FF	: Fast Forward
	FG	: Frequency Generator
	FL	: Filter
	FM	: Frequency Modulation
	F/R	: Front/Rear
	FS	: Frequency Synthesizer
	FSC	: Subcarrier Frequency
	F/V	: Frequency Voltage
	FWD	: Forward
G	GEN	: Generator
	GND	: Ground
H	H	: High, Horizontal
	Hz	: Hertz
I	IC	: Intergrated Circuit
	IF	: Intermediate Frequency
	INS	: Insert
	I/O	: Input/Output
L	L	: Low, Left, Coil
	LD	: LED
	LECHA	: Letter Character
	LP	: Long Play
	LPF	: Low Pass Filter
M	MAX	: Maximum
	MD	: Modulator
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer, Mixing
	M.M.	: Mono Multi Vibrator
	MMV	: Monostable Multivibrator
	MOD	: Modulation, Modulator
	MODEM	: Modulator-Demodulator
N	NR	: Noise Reduction
O	OSC	: Oscillator
	OSD	: On Screen Display
P	PB	: Playback
	PCB	: Printed Circuit Board
	PG	: Pulse Generator
	PLL	: Phase Locked Loop
	P-P	: Peak-to-Peak
	PRE-AMP	: Preamplifier
	PS	: Phase Shift
	PWM	: Pulse Width Modulation
Q	Q	: Transistor
	QH	: Quasi Horizontal
	QSR	: Quick Setting Record
	QTR	: Quick Timer Record
	QV	: Quasi Vertical
R	R	: Resistor, Right
	REI(or RC)	: Remocon, Receiver
	REC	: Recording
	REF	: Reference
	REG	: Regulated, Regulator
	REMOCON	: Remote Control(unit)
	REV	: Reverse
	REW	: Rewind
	RF	: Radio Frequency
	R/P	: Record/Playback
	RTC	: Real Time Counter
S	S	: Serial
	SH	: Shift
	SHARP	: Sharpness
	SIF	: Sound Intermediate Frequency
	SLD	: Side Locking
	S/N	: Signal to Noise Ratio
	SP	: Standard Play
	SUB	: Subtract, Subcarrier
	SW or S/W	: Switch
	SYNC	: Synchronization
	SYSCON	: System Control
T	T	: Coil
	TP	: Test Point
	TR	: Transistor
	TRK	: Tracking
	TRANS	: Transformer
	TU	: Tuner, Take-Up
U	UHF	: Ultra High Frequency
	UNREG	: Unregulated
V	V	: Volt, Vertical
	VA	: Always Voltage
	VCO	: Voltage Controlled Oscillator
	VGC	: Voltage Gain Control
	VHF	: Very High Frequency
	VISS	: VHS Index Search
	VR	: Variable Resistor or Volume
	V-Sync	: Vertical Synchronization
	VTG	: Voltage
	VV	: Voltage to Voltage
	VXO	: Voltage X-tal Oscillator
W	W	: Watt
	WHT	: White
	W/O	: With Out
X	X-TAL	: Crystal
Y	Y/C	: Luminance/Chrominance
	YNR	: Luminance Noise Reduction
Z	ZD	: Zener Diode

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, the products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

• Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▩) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Use Specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistor

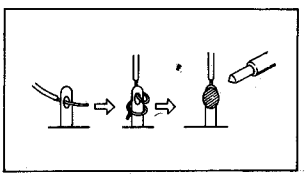


Fig. 1

5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.(Fig. 1)

6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

7. Check that replaced wires do not contact sharp edged or pointed parts.

8. When a power cord has been replaced, check that 10-15Kg of force in any direction will not loosen it.(Fig. 2)

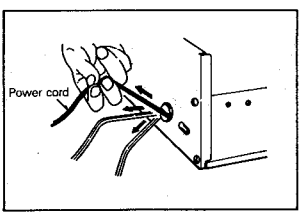


Fig. 2

9. Also check areas surrounding repaired locations.

10. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the parts specified. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

SAFETY CHECK AFTER SERVICING

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

• Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

• Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

• Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table below.

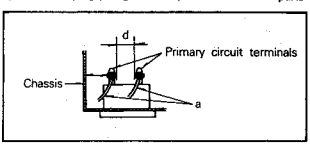


Fig. 3

Table 1:Ratings for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance(d),(d')
*110 to 130 V 200 to 240 V	Europe Australia	≧10 MΩ/500 V DC	4kV 1 minute	≧6mm(d) ≧8mm(d') (a Power cord)

*Class II model only.

Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

• Leakage Current test

Confirm specified or lower leakage current between B(earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.)

Measuring Method: (Power ON)
Insert load Z between B(earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure and following table.

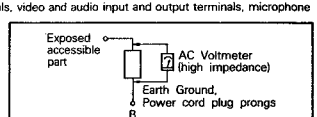


Fig. 4

Table 2:Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current(i)	Earth Ground (B) to:
100 to 130 V	Europe	2kΩ	i≦0.7m A peak i≦2m A dc	Antenna earth terminals
200 to 240 V	Australia	50kΩ	i≦0.7m A peak i≦2m A dc	Other terminals

Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INTRODUCTION

This service manual provides a variety of service information. It contains the mechanical structure of the Double Deck Video Cassette Recorder together with mechanical adjustments and the electronic circuits in schematic form. This Double Deck VCR was manufactured and assembled under our strict quality control standards and meets or exceeds industry specifications and standards.

FEATURES

- the VHS and 8 mm system with HQ-picture technology for extraordinary picture-sharpness and high resolution.
- the digital tracking automatic which makes the enjoying manual control obsolete.
- automatic power and playback.
- four VHS video heads for a clear still image and a variable slow motion.
- three 8 mm video heads for 8 mm playback only.
- assemble editing from 8 mm tape to VHS tape.
- the easy searching of your recordings by automatic and manual index marking, that can also be erased.
- the quick mechanism for fast tape function transitions.
- the long play VHS recording and playback facility.
- the real time tape counter and the VHS remaining tape time display.
- 8 timer programme memories, also for daily or weekly recurring recordings, within one year can be programmed at the same time.
- the on-screen display of many functions e.g. the stored timer programmes.
- and many more, like additional audio and video input at the front, Euro-AV sockets, audio dubbing, child lock, immediate recording timer, and title generator.
- SHOWVIEW
  ShowView is a trademark applied for by Gemstar Development Corp.
  ShowView system is manufactured under license from Gemstar Development Corporations.

SPECIFICATIONS

General

Power supply :		AC 230V(± 10%), 50Hz
Power consumption :		Approx. 45W
Cabinet size(W × H × D) :		430 × 99 × 390mm
Weight :		Approx. 8Kg
Operating temperature :		5° C to 35° C surrounding temperature
Operating humidity :		35-80%

8 mm Player section

Format :		8 mm PAL Standard
Heads :		3 video heads
Tape speed :	(SP)	20.05 mm/sec.
	(LP)	10.025 mm/sec.
Tape width :		8 mm
Video output :		1 Vpp 75 ohm unbalanced
Audio output :		500 mV, <1 kohm

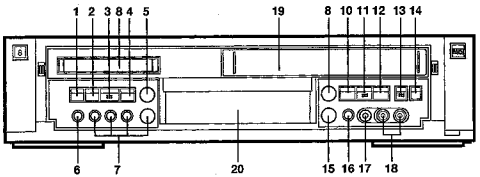
VHS Recorder section

Format :		VHS PAL Standard
Heads :		4 video heads
Tape speed :	(SP)	23.39 mm/sec.
	(LP)	11.635 mm/sec.
Tape width :		12.7 mm
Video :		PAL B/G, SECAM-L
Recording/playback time :		300 min. (LP : 600 min.) with E-300
Aerial input :		PAL : VHF 2-12 (SECAM) UHF 21-69 CATV S1-S40
RF output :		UHF channels 32~40 (Variable)
Video input :		1 Vpp 75 ohm unbalanced
Video output :		1 Vpp 75 ohm unbalanced
S/N ratio (video) :		45dB nominal
Audio input :		500 mV, >50 kohm
Audio output :		500 mV, <1 kohm
S/N ratio (audio) :		45 dB nominal
Audio frequency range :		63-12,500 Hz nominal

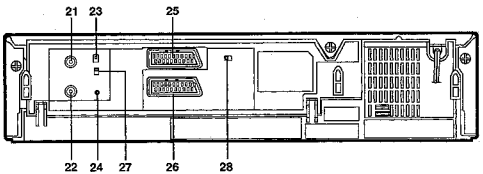
* Designs and specifications are subject to change without notice.

LOCATION OF CUSTOMER CONTROLS

FRONT



REAR



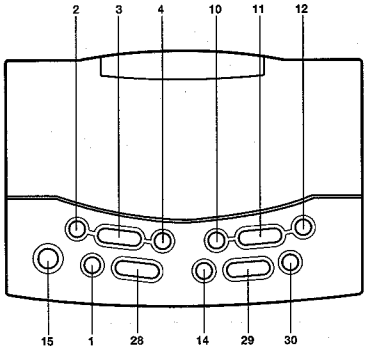
8 mm Player section

1. STILL BUTTON
2. REWIND/REVIEW BUTTON
3. PLAY BUTTON
4. FAST FORWARD/CUE BUTTON
5. STOP/EJECT BUTTON
6. V.INSERT BUTTON
7. ASSEMBLE EDITING BUTTONS
8. CASSETTE COMPARTMENT

VHS Recorder section

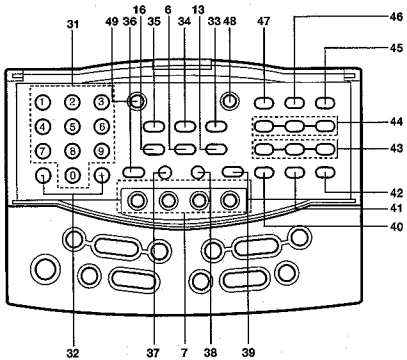
9. STOP/EJECT BUTTON
10. REWIND/REVIEW BUTTON
11. PLAY BUTTON
12. FAST FORWARD/CUE BUTTON
13. REC/QSR BUTTON
14. P/STILL BUTTON
15. OPERATE ON/OFF BUTTON
16. AUDIO DUBBING BUTTON
17. MIC IN JACK
18. AUDIO/VIDEO IN JACKS
19. CASSETTE COMPARTMENT
20. VCR DISPLAY
21. AERIAL INPUT SOCKET
22. RF OUT SOCKET
23. TPSG ON/OFF SWITCH
24. VIDEO CHANNEL CONTROL
25. EURO-AV 1 SOCKET
26. EURO-AV 2 SOCKET
27. SYSTEM SELECT SWITCH
28. COLOR ON/OFF SWITCH

REMOTE CONTROL



1. STILL BUTTON
2. REWIND/REVIEW BUTTON
3. PLAY BUTTON
4. FAST FORWARD/CUE BUTTON
6. V. INSERT BUTTON
7. ASSEMBLE EDITING BUTTONS
10. REWIND/REVIEW BUTTON
11. PLAY BUTTON
12. FAST FORWARD/CUE BUTTON
13. REC/QSR BUTTON
14. P/STILL BUTTON
15. OPERATE ON/OFF BUTTON
16. AUDIO DUBBING BUTTON

28. STOP BUTTON
29. STOP BUTTON
30. FRAME ADVANCE BUTTON
31. NUMBER BUTTONS
32. PROG/TRK BUTTONS (+/−)
33. TAPE SPEED BUTTON
34. TU/AV BUTTON
35. MIC MIX BUTTON
36. AUTO TRACKING BUTTON
37. 8 mm RESET BUTTON
38. VHS RESET BUTTON



39. REST BUTTON
40. MENU BUTTON
41. DISPLAY/PG. OUT BUTTON
42. CLEAR/PG. CLR BUTTON
43. SLOW/MFT BUTTONS
44. VISS BUTTONS
45. CHILD LOCK BUTTON
46. TV/VCR BUTTON
47. VPS BUTTON : *
48. SHOWVIEW BUTTON
49. MONITOR BUTTON

※ * : Optional Function

SECTION 2 CABINET & MAIN FRAME

SERVICE FIXTURE CONNECTING METHOD

1. SVC FIXTURE Connecting Method

A. FIXTURE Cable ① Connecting Method.

a) Connect the FIXTURE Cable ① between Main C. B.A and Junction C.B.A. (P2J01, P2J02, P2J03)

b) At this time, should be in the left side " ◄ LEFT" mark on the P.C.B of the FIXTURE Cable ①. (See Fig. 2-a, 2-c)

c) Connect the connector of "MAIN" mark of FIXTURE Cable ① with the Main C.B.A and the connector of "JUNCTION" mark with the Junction C.B.A. (See Fig. 2-a, 2-c)

B. FIXTURE Cable ② Connecting Method.

a) Connect the FIXTURE Cable ② between Main C. B.A and Pre-Amp Ass'y. (P3P01=P9301, P3P02=P9302)

b) At this time, should be in the left side " ◄ LEFT" mark on the P.C.B of the FIXTURE Cable ②. (See Fig 2-a, 2-b)

c) Connect the connector of "MAIN" mark of FIXTURE Cable ② with the Main C.B.A and the connector of "JUNCTION" mark with the Pre-Amp Ass'y. (See Fig. 2-a, 2-b)

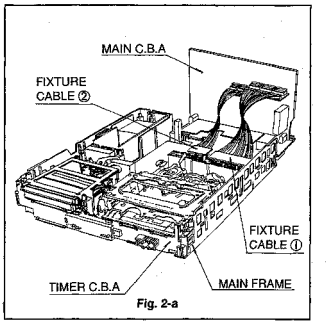


Fig. 2-a

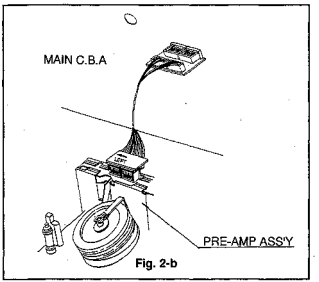


Fig. 2-b

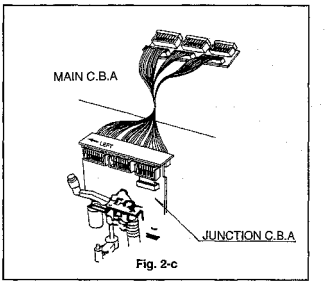
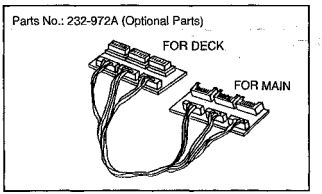


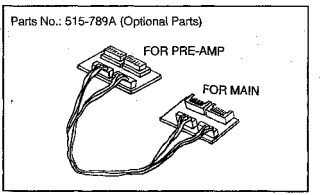
Fig. 2-c

2. Electrical Service Fixture List

A. Fixture Cable ①.



B. Fixture Cable ②.



CABINET DISASSEMBLY

1. Top Case

A. Release 7 screws (1).
B. Hold the back of Top Case and lift it up slightly backward to remove it.

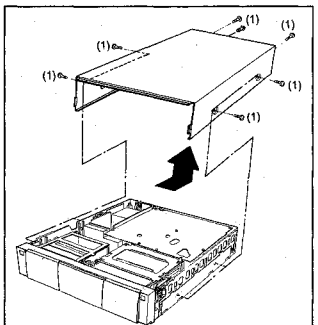


Fig. 2-1

2. Bottom Cover

A. Release 9 screws (2) to remove the Bottom Cover.

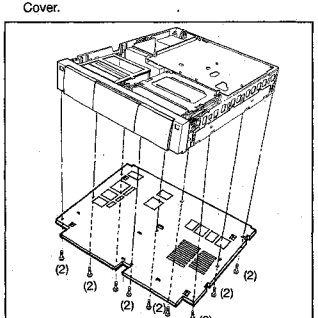


Fig. 2-2

3. Front Panel

A. Release 2 screws (3).
B. Remove the stoppers on the top of Front Panel.
C. Remove the stoppers on the bottom side Front Panel.

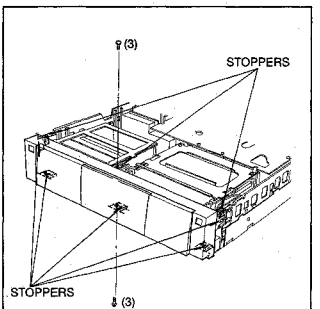


Fig. 2-3

* Caution

When reassemble the Front panel, assemble it in condition of inserting the Door Cassette inside, as shown in Fig.2-4

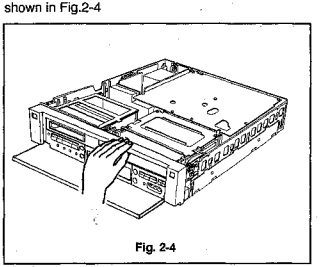


Fig. 2-4

CIRCUIT BOARD DISASSEMBLY

1.Circuit Board Arrangement

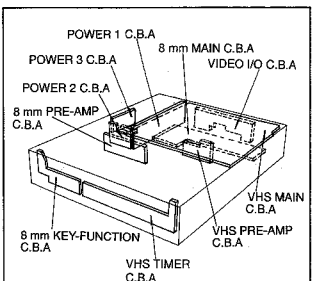


Fig. 2-5

2. VHS Main Circuit Board

A. Release 6 screws (4).
B. Remove the Main C.B.A in the direction of arrow (A).

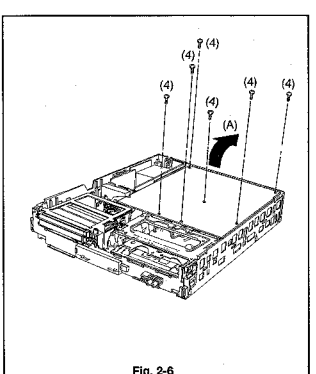


Fig. 2-6

3. Power 1, 2, 3 Circuit Board

A. Remove the Bottom Cover. (Fig. 2-2)
B. Release 4 screws (5).
C. Remove the Power C.B.A in the direction of arrow (B).

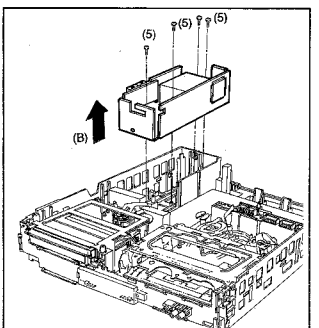


Fig. 2-7

4. 8mm Main Circuit Board

A. Release 3 screws (6).
B. Remove the 8mm Main C.B.A in the direction arrow (C).

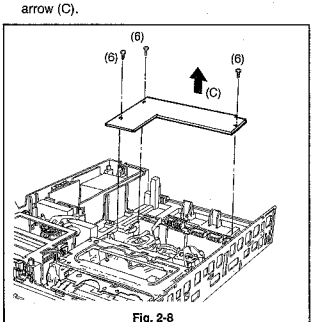


Fig. 2-8

5. 8mm/VHS Pre-Amp Circuit Board

A. Release 2 screws (7).
B. Remove the 8mm Pre-Amp C.B.A.
C. Release 3 screws (8).
D. Remove the VHS Pre-Amp C.B.A.

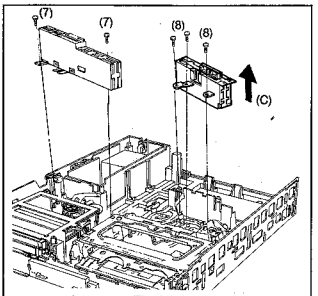


Fig. 2-9

6. 8 mm/VHS Key Function Circuit Board

A. Release screw (9).
B. Release 5 stoppers in the direction arrow (D).
C. Remove the 8mm/VHS Key Function C.B.A in the direction arrow (E).

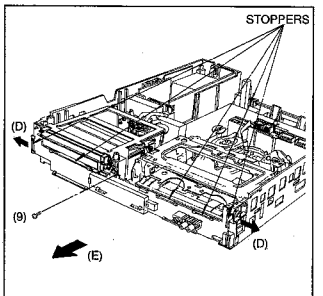
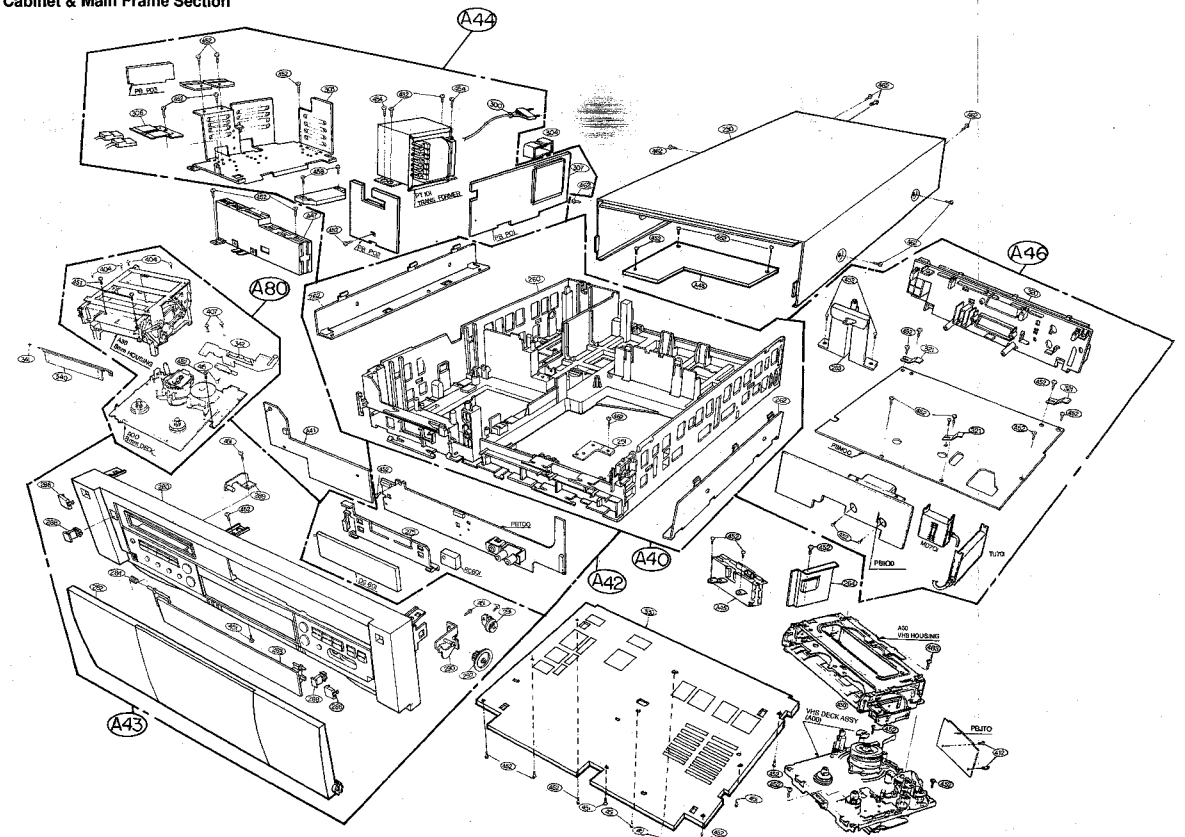


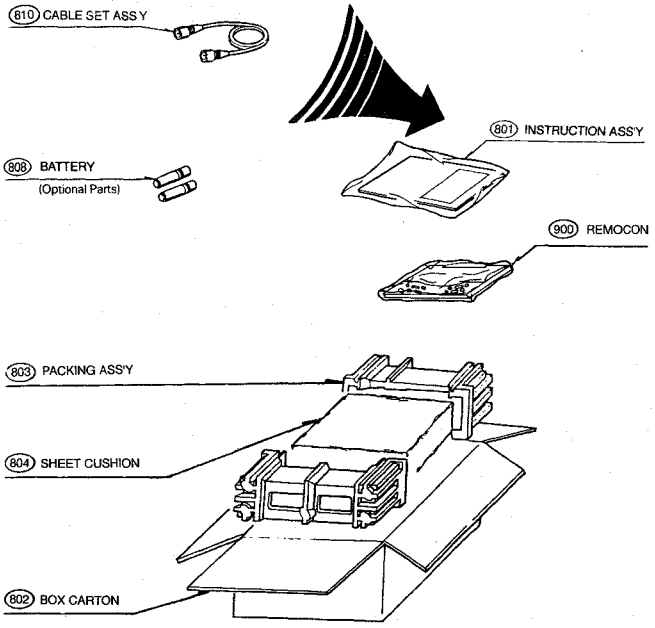
Fig. 2-10

EXPLODED VIEWS

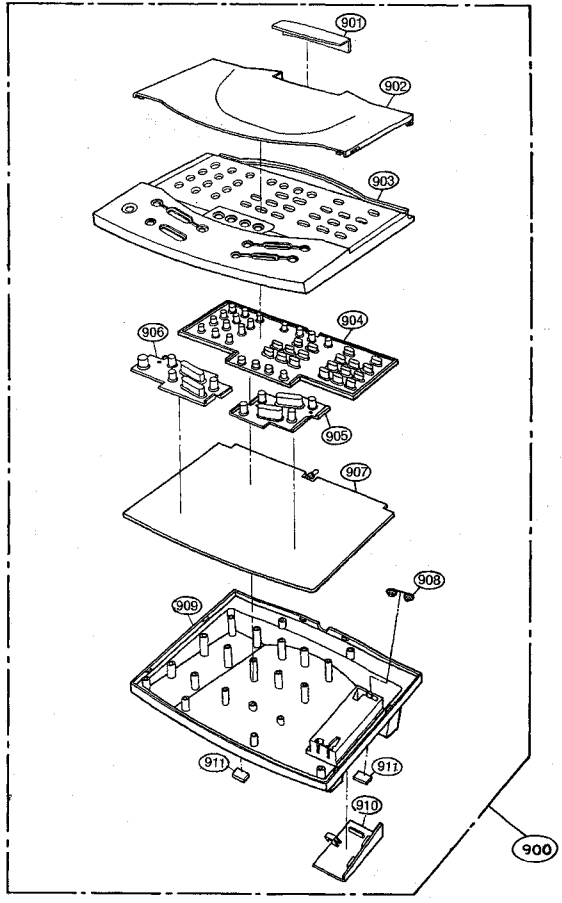
1. Cabinet & Main Frame Section



2. Packing Accessory Section



3. Remote Control Section



SECTION 3 ELECTRICAL

ELECTRICAL ADJUSTMENT PROCEDURES

• Electronic Test Equipment Requirement

- Oscilloscope
- Video signal Generator
- Modem Tester
- Level Meter
- Frequency Counter
- Power Supply
- Monitor Scope
- + Driver
- Test Tape (SP)-PAL, SECAM (VHS, 8mm)
- Recording Tape (VHS)
- Digital Multimeter

1. VHS Circuit Adjustment

1-1. Servo Circuit

1-1-1. PG Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK	6.5H±0.5H (1H=64.0μsec)	TP201 (H.SW) TP202 (V.Out terminal)	VR201

Procedure :

a. Playback a VHS PAL SP test tape.
b. Connect CH-1 of oscilloscope to TP201 (H.SW) and CH-2 to TP202 (Video Out terminal).
c. Trigger the complex Video signal to CH-1 H.SW, and adjust VR201 so that the distance from switching point of H.SW signal to the starting point of horizontal synchronized signal is 6.5H± 0.5H (416±32μsec)

Waveform

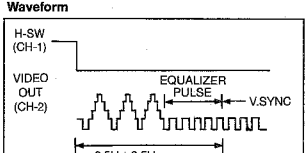


Fig. 3-1-1

1-2. Y/C Circuit

1-2-1. EE Level Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
STOP	2.0±0.1Vp-p	TP202	VR304

Procedure :

a. Connect the Video signal Generator to Video in terminal.
b. Input Color Bar signal to Video in terminal.
c. Connect CH-1 of oscilloscope to TP202.
d. Adjust VR304 so that the value from the lower part of synchronism to 100% white signal is 2.0 ±0.1Vp-p.

Waveform

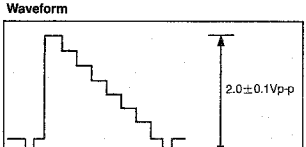


Fig. 3-1-2

1-2-2. Playback Luminance Level Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK (SP)	2.0±0.1Vp-p	TP202	VR305

Procedure :

a. Connect CH-1 of oscilloscope to TP202.
b. Playback a VHS PAL SP test tape (with 100% white signal).
c. Adjust VR305 so that the value from the lower part of synchronism to 100% white signal is 2.0 ±0.1Vp-p.

Waveform

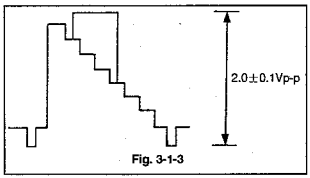


Fig. 3-1-3

1-2-3. FM Carrier Frequency Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
RECORD LINE mode	3.8MHz±0.05MHz at SYNC Tip	TP301 (CAR/DEV TP)	VR303

Procedure :

a. Input Color Bar signal (with 100% white signal) to Video in terminal (Scart Jack).
b. Connect In terminal of Modem Tester to TP301.
c. Connect Out terminal of Modem Tester to CH-1 of oscilloscope (But the set and the Modem Tester should be connected with 10:1 probe).
d. The terminal position of Modem Tester is operated to be ATT.0dB, PAL/SECAM mode, Demod, Marker on.
e. Adjust VR303 so that SYNC Tip of video signal is agreed with 3.8MHz Marker on scope.

Waveform

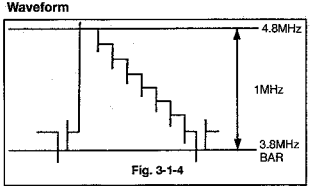


Fig. 3-1-4

1-2-4. FM Deviation Frequency Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
RECORD LINE mode	4.8MHz±0.05MHz at White Peak	TP301 (CAR/DEV TP)	VR301

Procedure :

a. Input Color Bar signal (with 100% white signal) to Video in terminal (Scart Jack).
b. Connect In terminal of Modem Tester to TP301.
c. Connect Out terminal of Modem Tester to CH-1 of oscilloscope (But the set and the Modem Tester should be connected with 10:1 probe).
d. The terminal position of Modem Tester is operated to be ATT.0dB, PAL/SECAM mode, Demod, Marker on.
e. Adjust VR301 so that 100% white peak of video signal is agreed with 4.8MHz Marker on scope.

Waveform

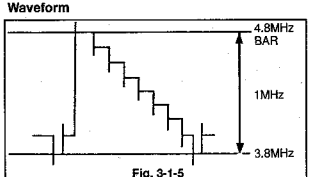


Fig. 3-1-5

1-2-5. Recording Luminance Level Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
RECORD LINE mode	350mVp-p	TP302 (REC-Y)	VR302

Procedure :

a. Input Color Bar signal (with 100% white signal) to Video in terminal (Scart Jack).
b. Connect CH-1 of oscilloscope to TP202.
c. Connect CH-2 of oscilloscope to TP302.
d. Record the SP mode.
e. Adjust VR302 so that the waveform is 350mVp-p.

Waveform

Fig. 3-1-6

1-2-6. SECAM Playback Gate Timing Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK	CH-1 & CH-2 Refer to waveform	TP202 TP303	VR306

Procedure :

a. Connect CH-1 of oscilloscope to TP202.
b. Connect CH-2 of oscilloscope to TP303.
c. Playback a VHS SECAM test tape (with 100% white color bar signal).
d. Adjust VR306 so that SYNC Gate signal of CH-2 is agreed with starting point of video signal sync period on scope CH-1.

Waveform

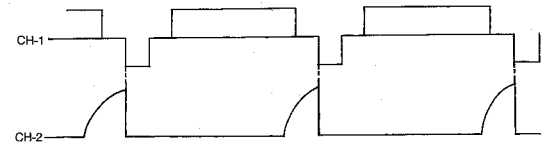


Fig. 3-1-7

1-2-7. SECAM Playback Input Bell Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK	Refer to waveform	TP202 TP304	FL306

Procedure :

a. Connect CH-1 of oscilloscope to TP202.
b. Connect CH-2 of oscilloscope to TP302.
c. Playback a VHS SECAM test tape (with 100% white color bar signal).
d. Adjust FL306 so that the envelope waveform of color signal become a flat level it not flat.

Waveform

Before Adjustment

After Adjustment

Fig. 3-1-8

1-2-8. SECAM Playback Output Bell Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK	Refer to waveform	TP202 TP305	FL308

Procedure :

a. Connect CH-1 of oscilloscope to TP202.
b. Connect CH-2 of oscilloscope to TP305.
c. Playback a VHS SECAM test tape (with 100% white color bar signal).
d. Adjust FL308 so that the Magenta part of color signal become a flat level if not flat.

Waveform

Before Adjustment

After Adjustment

Fig. 3-1-9

1-2-9. SECAM Recording Bell Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
RECORD	Refer to waveform	TP202 TP304	FL305

Procedure :

a. Connect CH-1 of oscilloscope to TP202.
b. Connect CH-2 of oscilloscope to TP304.
c. Input SECAM Color bar signal (with 100% white signal) to Video in terminal (Scart Jack).
d. Record the SP mode.
e. Adjust FL305 so that the Magenta part of color signal become a flat level if not flat.

Waveform

Fig. 3-1-10

1-3. Audio Circuit

1-3-1. Record Bias Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
RECORD (SP)	2.7±0.05mVrms	R436 Both Terminal	VR401

Procedure :

a. Loading the recording tape and record.
b. Connect (+), (−) terminal of Level Meter to both terminals R436.
c. Adjust VR401 so that the oscillation voltage fit to specification.

1-4. Tuner/IF Circuit

1-4-1. VIF Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
EE	2.5V±0.1V	TP702	T701

Procedure :

a. Connect as shown in Fig. 3-1-11.
b. Receive the CH-9 (203.25MHz).
c. Adjust T701 so that the Digital voltmeter 1 is 2.5 ±0.1V.

CONNECTION DIAGRAM

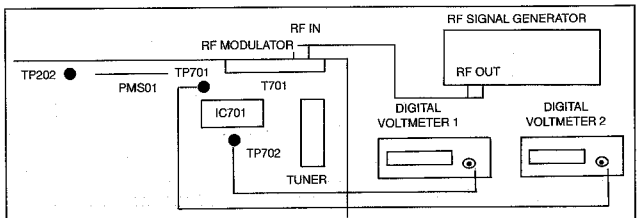


Fig. 3-1-11

***Caution in testing**

1. When practing this adjustment, adjust after more than 10minutes with TV set turning on.
2. Adjust after completing itself test of measuring apparatus.
3. Sweep OSC marker frequency is followed by Table 1.

***Abbreviation**

- APC : Adjacent Picture Carrier
- SIF : Sound Intermediate Frequency
- CIF : Color Intermediate Frequency
- CEN : Center Frequency
- PIF : Picture Intermediate Frequency
- ASC : Adjacent Sound Carrier

Table 1 Frequency Table (MHz)

BROADCASTING SYSTEM	ADJUSTMENT MARKER FREQUENCY					
	APC	SIF	CIF	CEN	PIF	ASC
PAL B/G+SECAM L	31.90	33.40	34.47	36.00	38.90	40.40

1-4-2. RF AGC Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
EE	5V±0.1V	TP701	VR701

Procedure :

a. Connect as shown in Fig. 3-1-11.
b. Receive the CH-9 (203.25MHz, strength of input electric field : 65dBμV).
c. Adjust VR701 so that the Digital voltmeter 2 is 5V±0.1V.

2. 8mm Circuit Adjustment

2-1. Servo Circuit

2-1-1. PG Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK	7H±1.8H (1H=64.0μsec)	TP4K1 (H.SW) TP3A1 (V.Out terminal)	VR501

Procedure :

a. Playback a 8mm PAL SP test tape.
b. Connect CH-1 of oscilloscope to TP4K1 (H.SW) and CH-2 to TP3A1 (Video Out terminal)
c. Trigger the complex Video signal to CH-1 H.SW, and adjust VR501 so that the distance from switching point of H.SW signal to the starting point of horizontal synchronized signal is 7H± 1.8H (448±115.2μsec).

Waveform

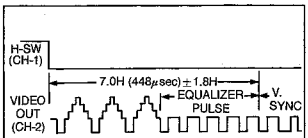


Fig. 3-2-1

2-2. Y/C Circuit

2-2-1. Playback Output Level Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK (SP)	1.0±0.05Vp-p	TP3A1	VR3A1

Procedure :

a. Connect CH-1 of oscilloscope to TP3A1.
b. Playback a 8mm PAL SP test tape (Color bar with 100% white signal).
c. Adjust VR3A1 so that Video out level is 1.0± 0.05Vp-p.

Waveform

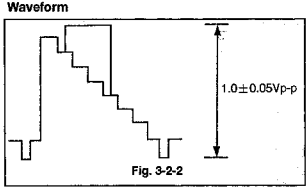


Fig. 3-2-2

2-2-2. Color VCO Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK (SP)	DC2.5±0.1Vp-p	TP3A2	FL3A2

Procedure :

a. Connect CH-1 of oscilloscope to TP3A2.
b. Playback a 8mm PAL SP test tape (Color bar with 100% white signal).
c. Adjust FL3A2 so that DC level is 2.5±0.1Vp-p.

2-3. Audio Circuit

2-1-1. FM VCO Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK (SP)	DC2.1±0.1Vp-p	TP4A2	VR4A2

Procedure :

a. Connect CH-1 of oscilloscope to TP4A1.
b. Playback a 8mm PAL SP test tape (with 400Hz Audio signal).
c. Adjust VR4A1 so that Center Voltage is DC2.1± 0.1Vp-p.

Waveform

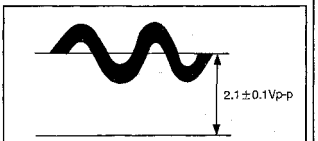


Fig. 3-2-3

2-3-2. FM Deviation Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
PLAYBACK (SP)	6±0.5dBm	TP4A1 (Audio Out terminal)	VR4A1

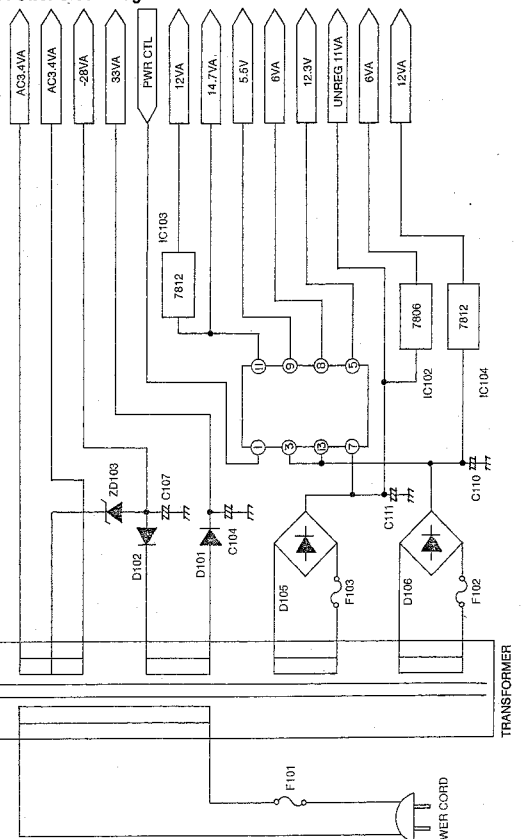
Procedure :

a. Connect (+) terminal of Level Meter to TP4A2 (Audio Out terminal).
b. Playback a 8mm PAL SP test tape (with 1KHz or 400Hz Audio signal).
c. Adjust VR4A2 so that level is 6±0.5dBm.

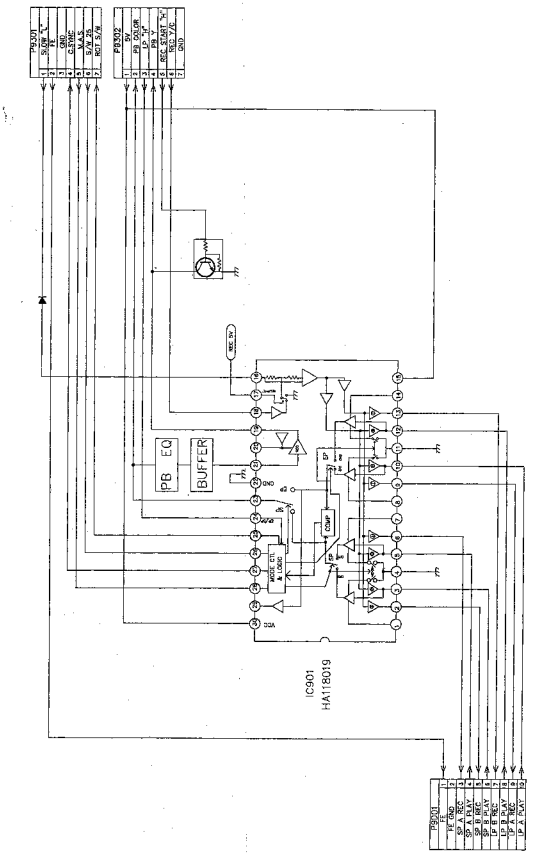
BLOCK DIAGRAMS

1. VHS Block Diagrams

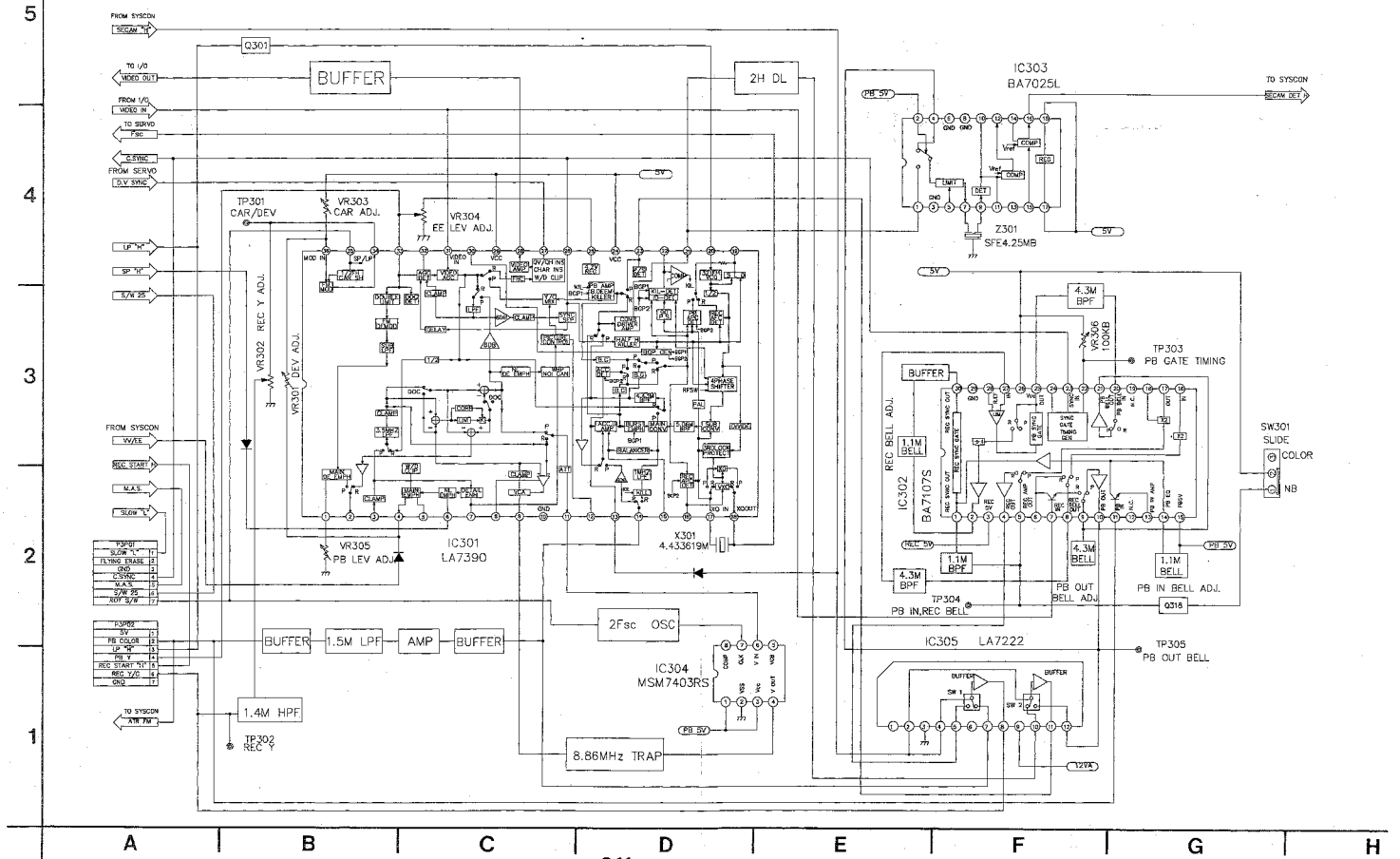
1-1. Power Block Diagram



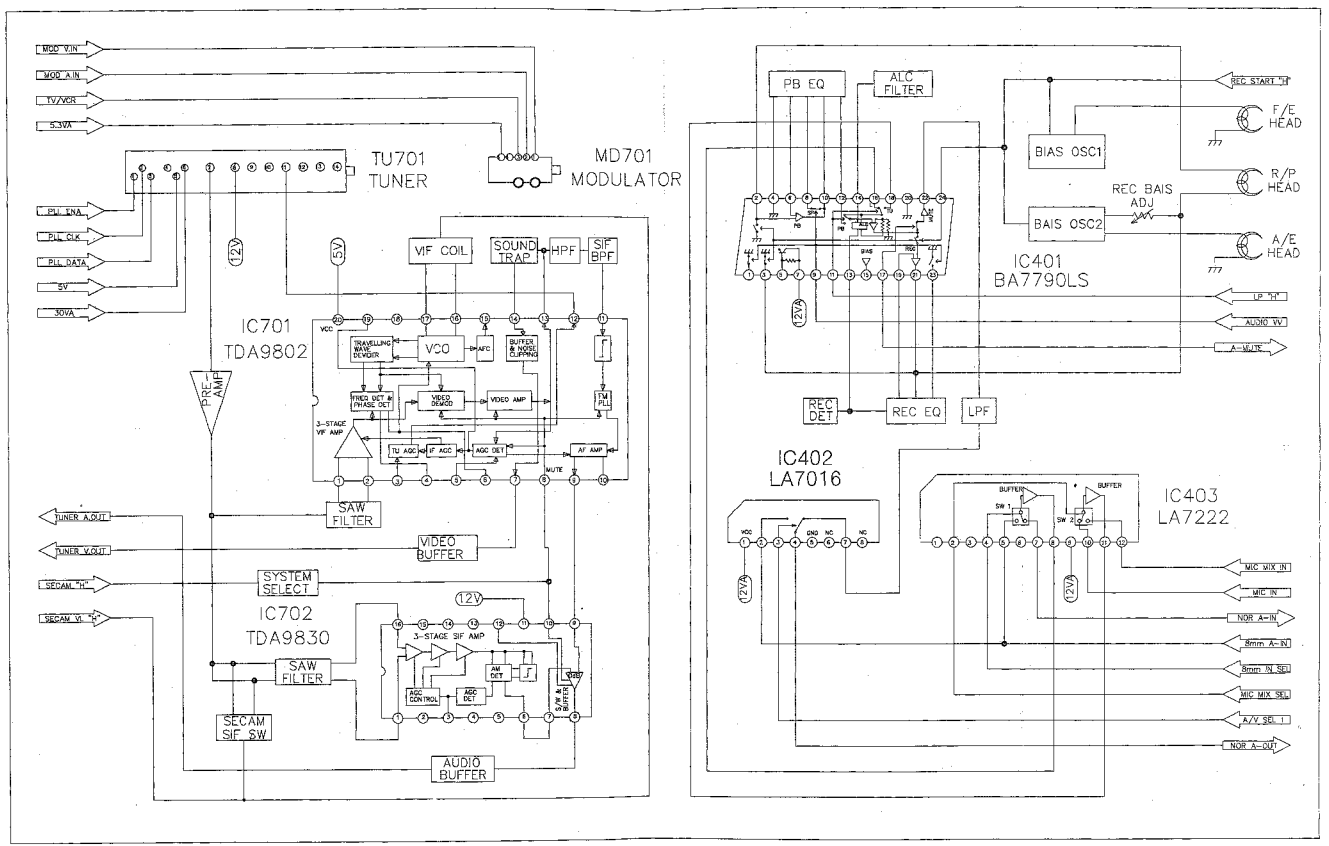
1-2. Pre-Amp Block Diagram



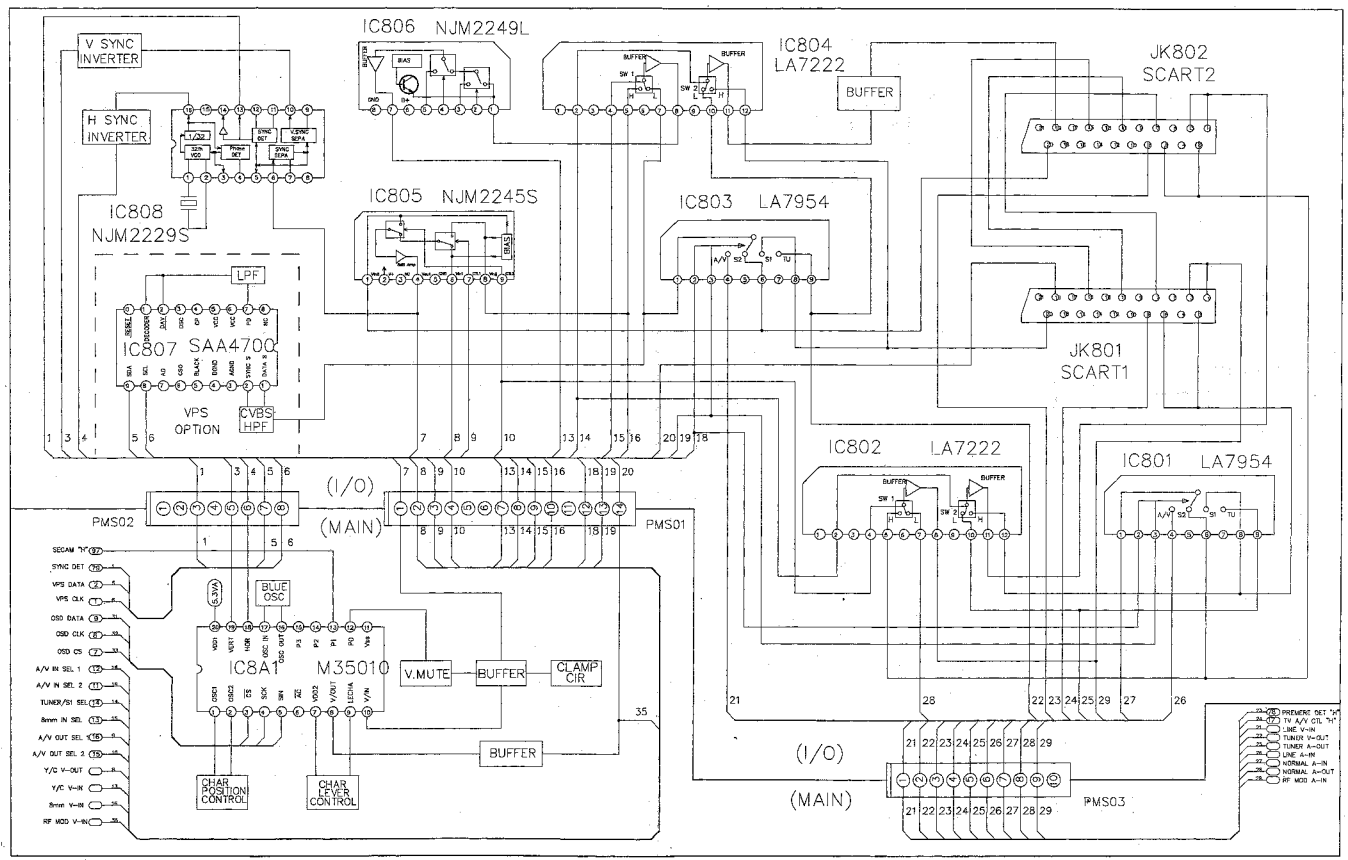
1-3. Y/C Block Diagram



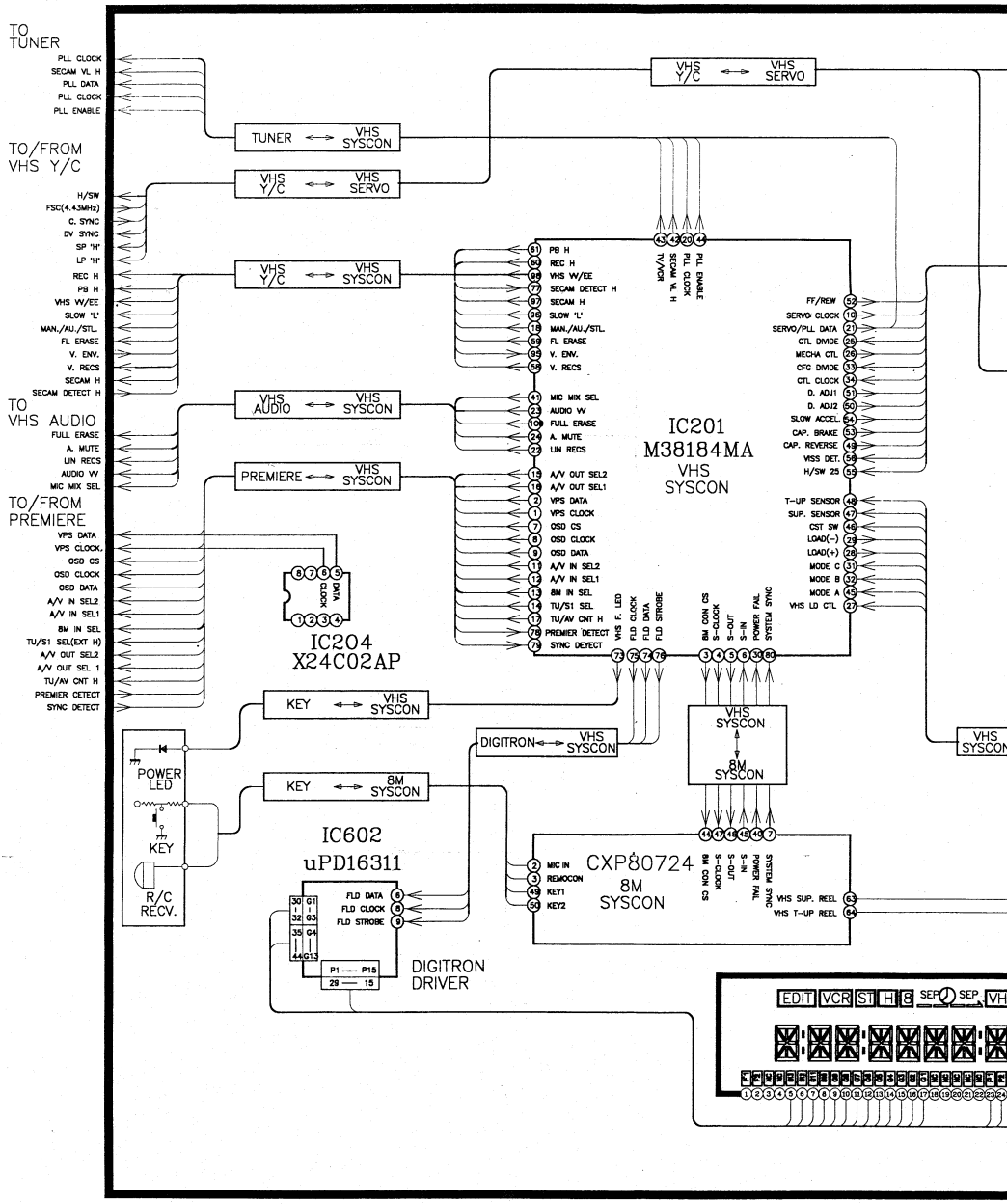
1-4. Tuner/IF & Audio Block Diagram

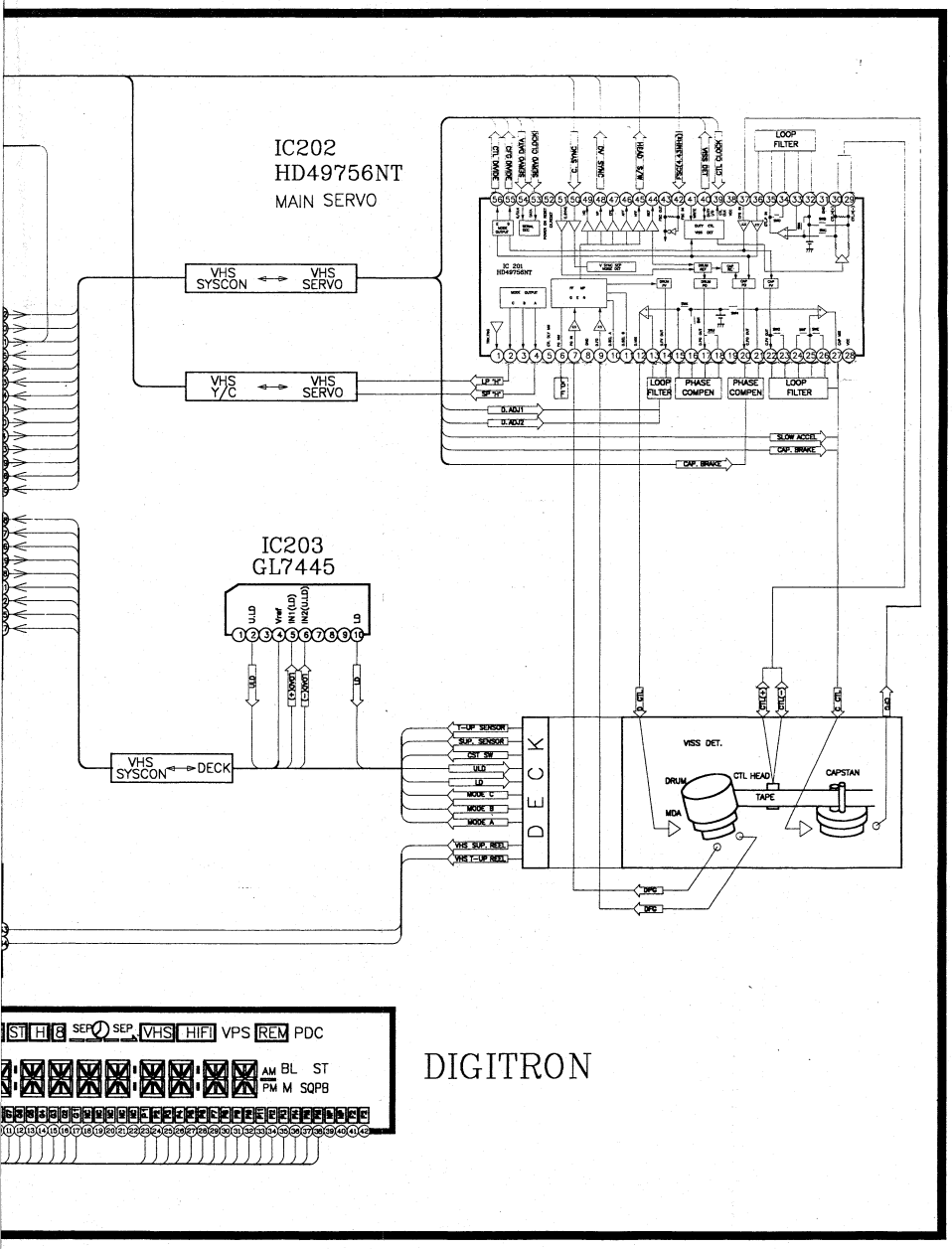


1-5. In/Out & Function OSD Block Diagram



1-6. Main System (Servo, Syscon, Timer) Block Diagram



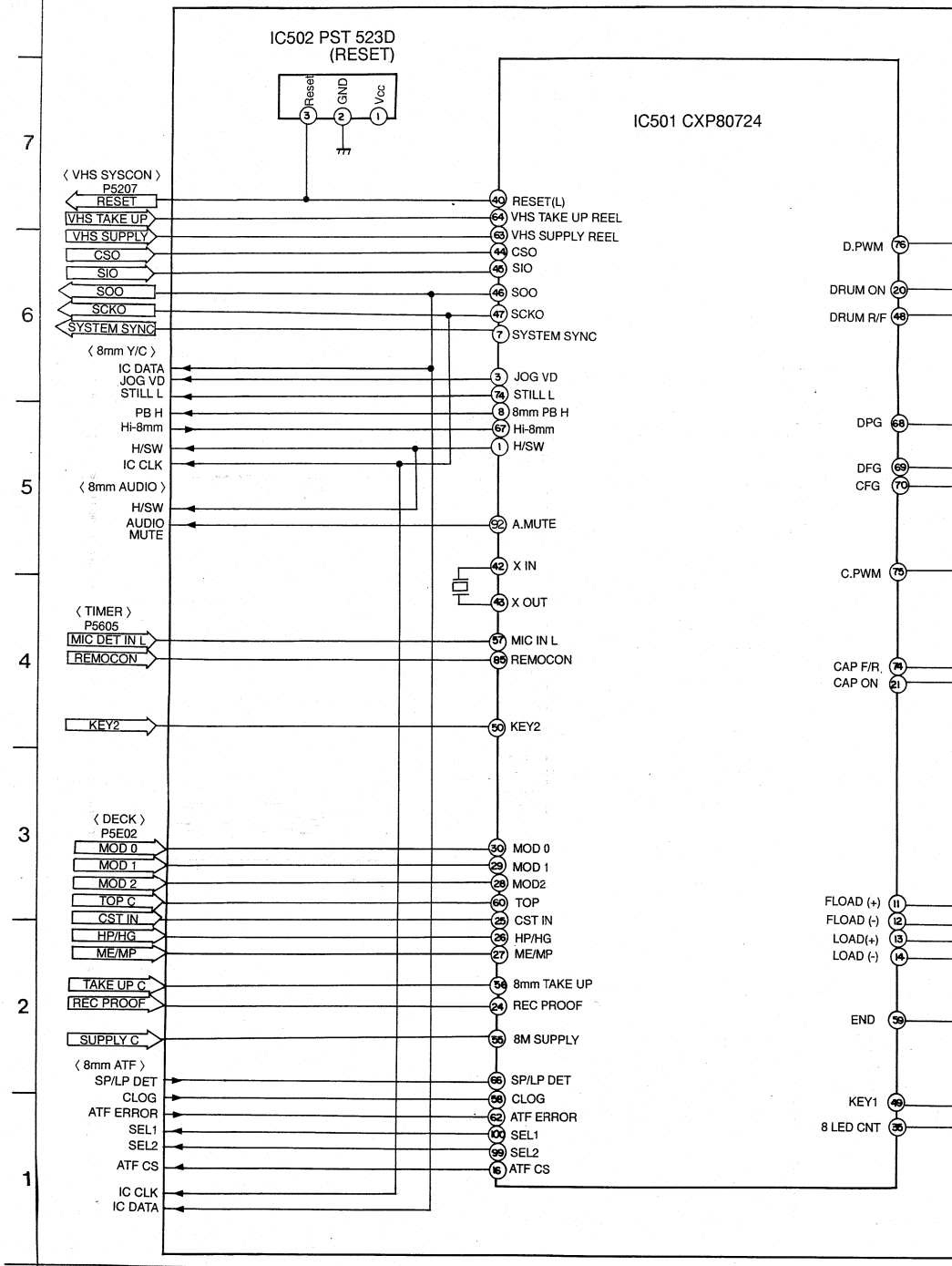

IC202
HD49756NT
MAIN SERVO
VHS SYSCON
VHS SERVO
VHS Y/C
VHS SERVO
LOOP FILTER
PHASE COMPEN
PHASE COMPEN
LOOP FILTER
SLOW ACCEL
CAP. BRAKE
IC203
GL7445
VHS SYSCON
DECK
D E C K
VISS DET.
DRUM
CTL HEAD
CAPSTAN
TAPE
MDA
DPG
DPG

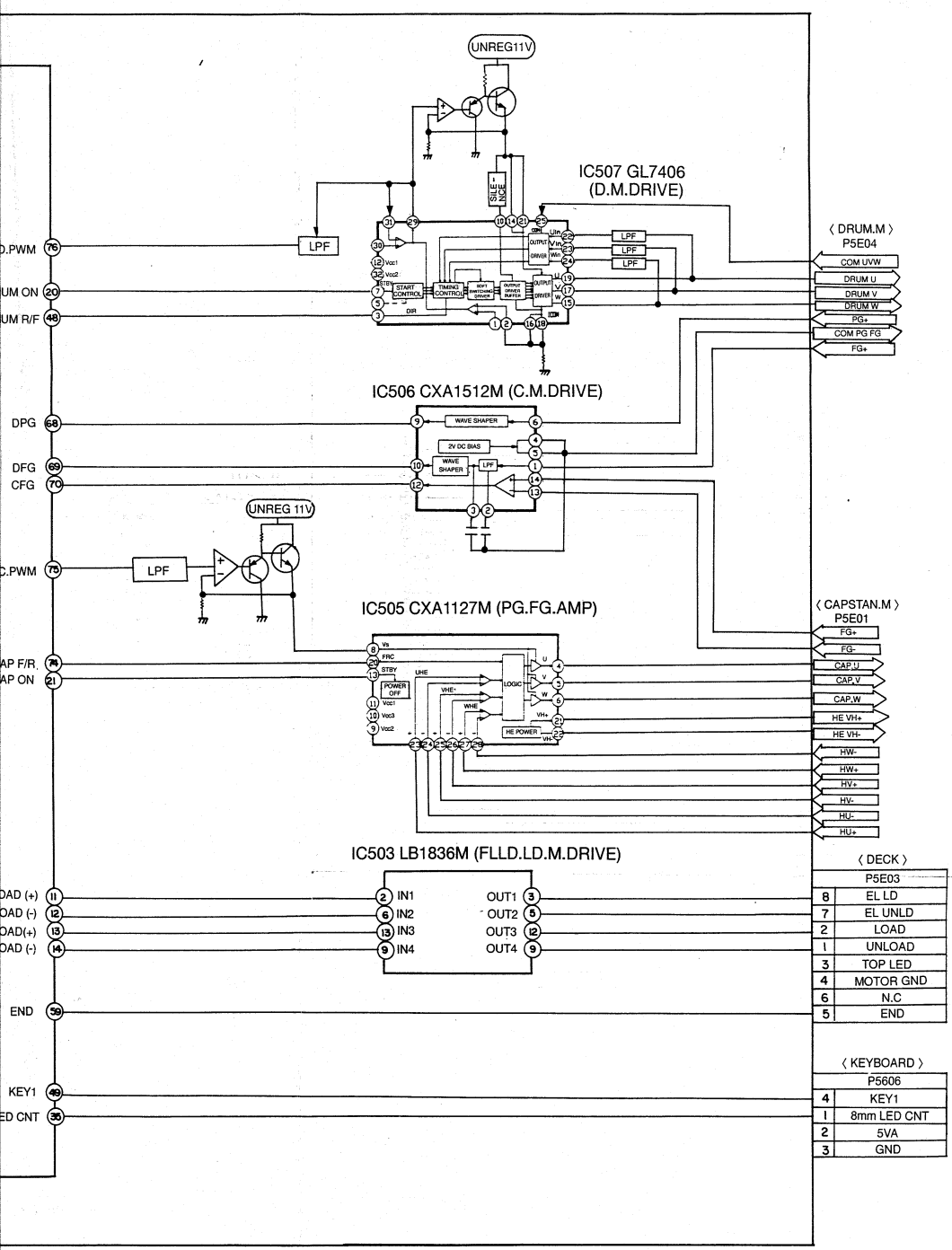
ST HI-FI SEP SEP VHS HIFI VPS REM PDC
AM PM BL ST M SQPB

DIGITRON

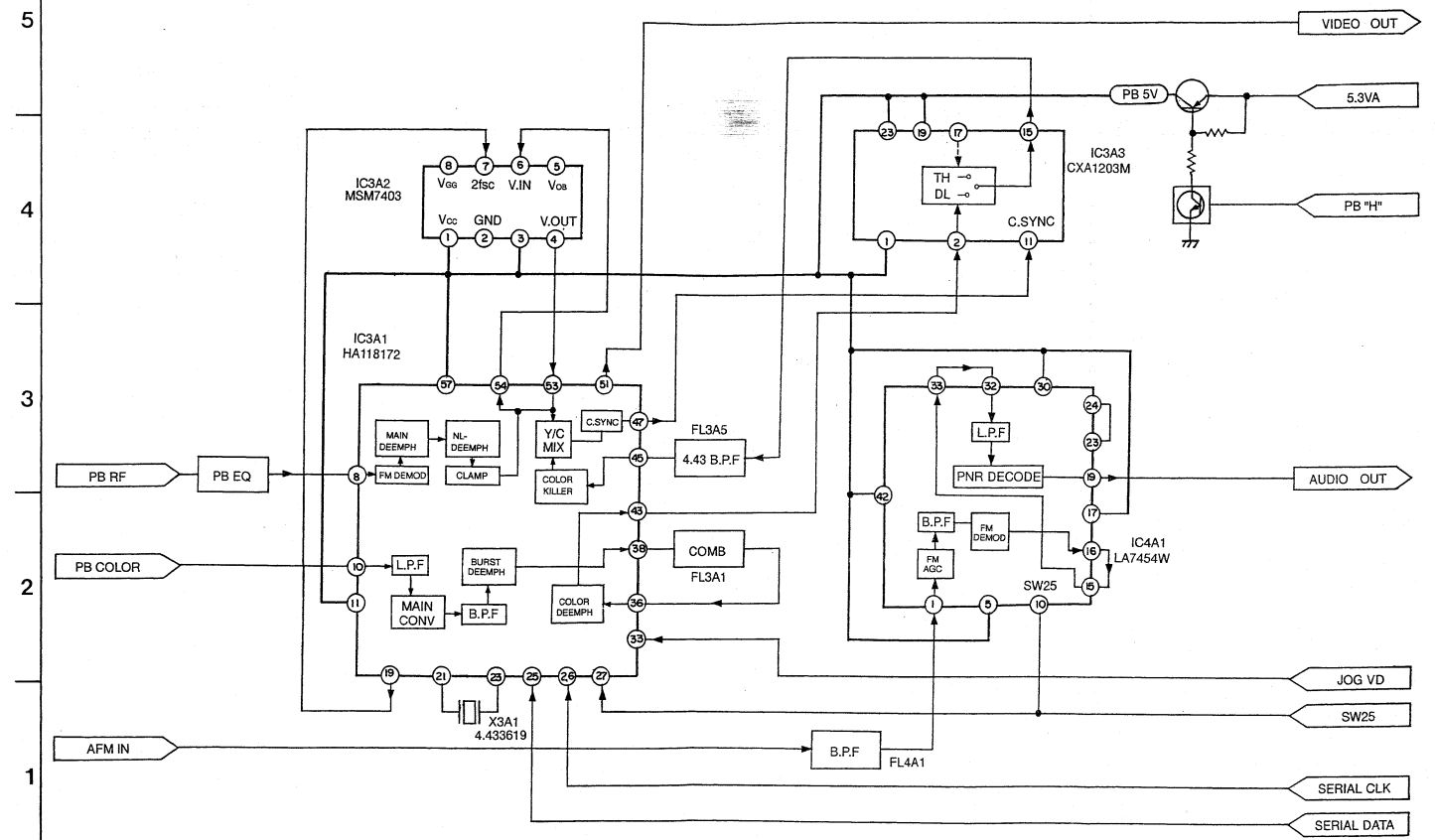
2. 8mm Block Diagrams

2-1. Main System (Servo, Syscon) Block Diagram

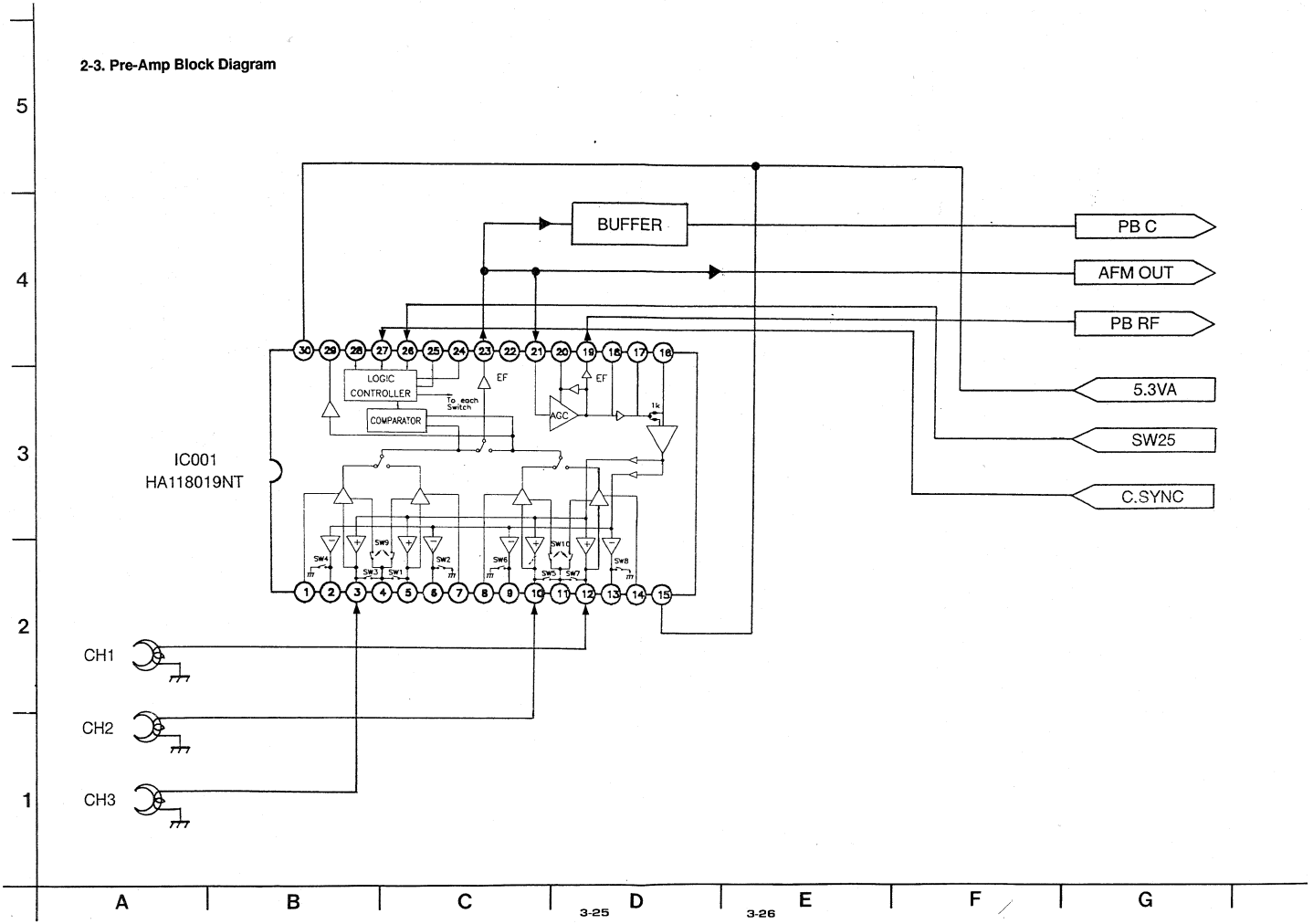



UNREG11V
IC507 GL7406
(D.M.DRIVE)
LPF
LPF
LPF
LPF
〈 DRUM.M 〉
P5E04
COM UVW
DRUM U
DRUM V
DRUM W
PG+
COM PG FG
FG+
D.PWM 76
UM ON 20
UM R/F 48
IC506 CXA1512M (C.M.DRIVE)
WAVE SHAPER
2V DC BIAS
WAVE SHAPER
LPF
DPG 68
DFG 69
CFG 70
UNREG 11V
LPF
C.PWM 75
IC505 CXA1127M (PG.FG.AMP)
〈 CAPSTAN.M 〉
P5E01
FG+
FG-
CAP.U
CAP.V
CAP.W
HE VH+
HE VH-
HW-
HW+
HV+
HV-
HU-
HU+
AP F/R 78
AP ON 21
IC503 LB1836M (FLLD.LD.M.DRIVE)
〈 DECK 〉
P5E03
8 EL LD
7 EL UNLD
2 LOAD
1 UNLOAD
3 TOP LED
4 MOTOR GND
6 N.C
5 END
OAD (+) 11
OAD (-) 12
OAD(+) 13
OAD (-) 14
IN1
IN2
IN3
IN4
OUT1
OUT2
OUT3
OUT4
END 59
〈 KEYBOARD 〉
P5606
4 KEY1
1 8mm LED CNT
2 5VA
3 GND
KEY1 49
ED CNT 36

2-2. Main Analog (Y/C, Audio) Block Diagram



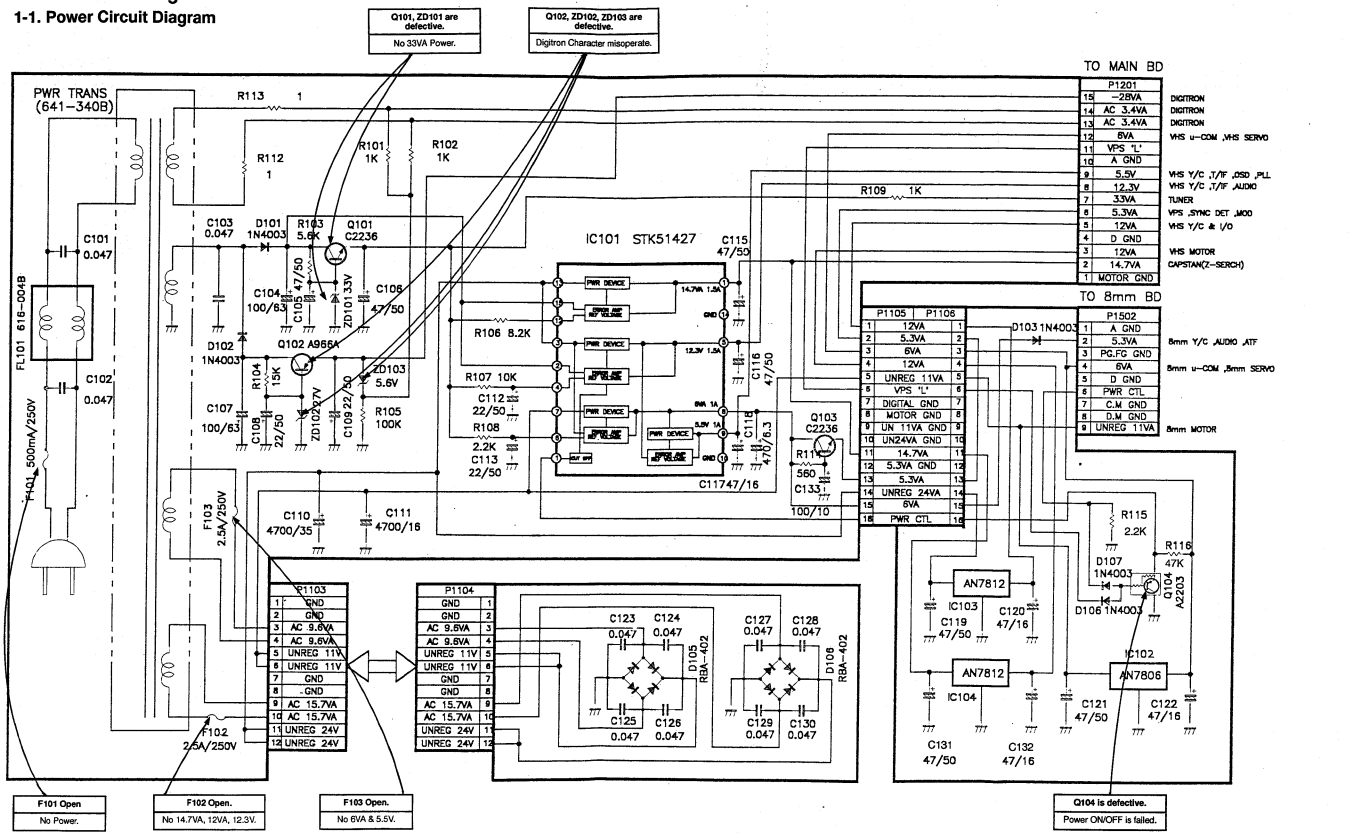
2-3. Pre-Amp Block Diagram



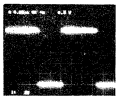
CIRCUIT DIAGRAMS

1. VHS Circuit Diagrams

1-1. Power Circuit Diagram



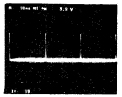
* Servo Oscilloscope Waveform

① 

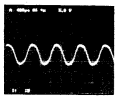
IC201 Pin① TRK TRIGGER

②

IC201 Pin⑥ PG M.M

③ 

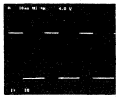
IC201 Pin⑦ DRUM P.G

④ 

IC201 Pin⑨ DRUM F.G

⑤

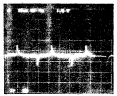
IC201 Pin㉗ SLOW CONTROL

⑥ 

IC201 Pin㉙ REC CTL

⑦

IC201 Pin㉚ REC CTL

⑧ 

IC201 Pin㉕ REC CTL

⑨

IC201 Pin㊲ CAPSTAN F.G

⑩

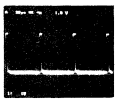
IC201 Pin㊴ CLOCK CTL

⑪

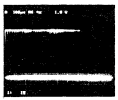
IC201 Pin㊺ SW25

⑫

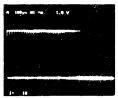
IC201 Pin㊵ DV. SYNC

⑬ 

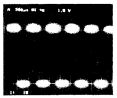
IC201 Pin㊿ COMPOSITE SYNC

⑭ 

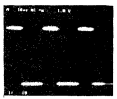
IC201 Pin㊸ SERIAL DATA

⑮ 

IC201 Pin㊹ SERIAL CLOCK

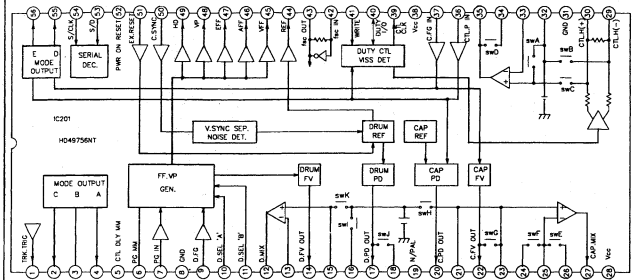
⑯ 

IC201 Pin㊺ CFG C.D

⑰ 

IC201 Pin㊽ CTL C.D

* Servo IC and TR Voltage Sheet
IC 201(HD49756NT)



RECORD MODE	5	2.5	0.7	1.1	3.8	5	0.9	0	0	2.5	0	2.5	2.6	2.6	2.6	0	5	3.6	5	2.4	2.5	2.5	2.5	2.5	0	2.7	2.1
PLAYBACK MODE	2	2.5	0.7	1.1	3.8	5	0.2	0	0	2.5	2.5	2.5	2.6	2.6	2.6	0	5	2	5	2.4	2.5	2.5	2.5	2.5	0	2.5	2.5

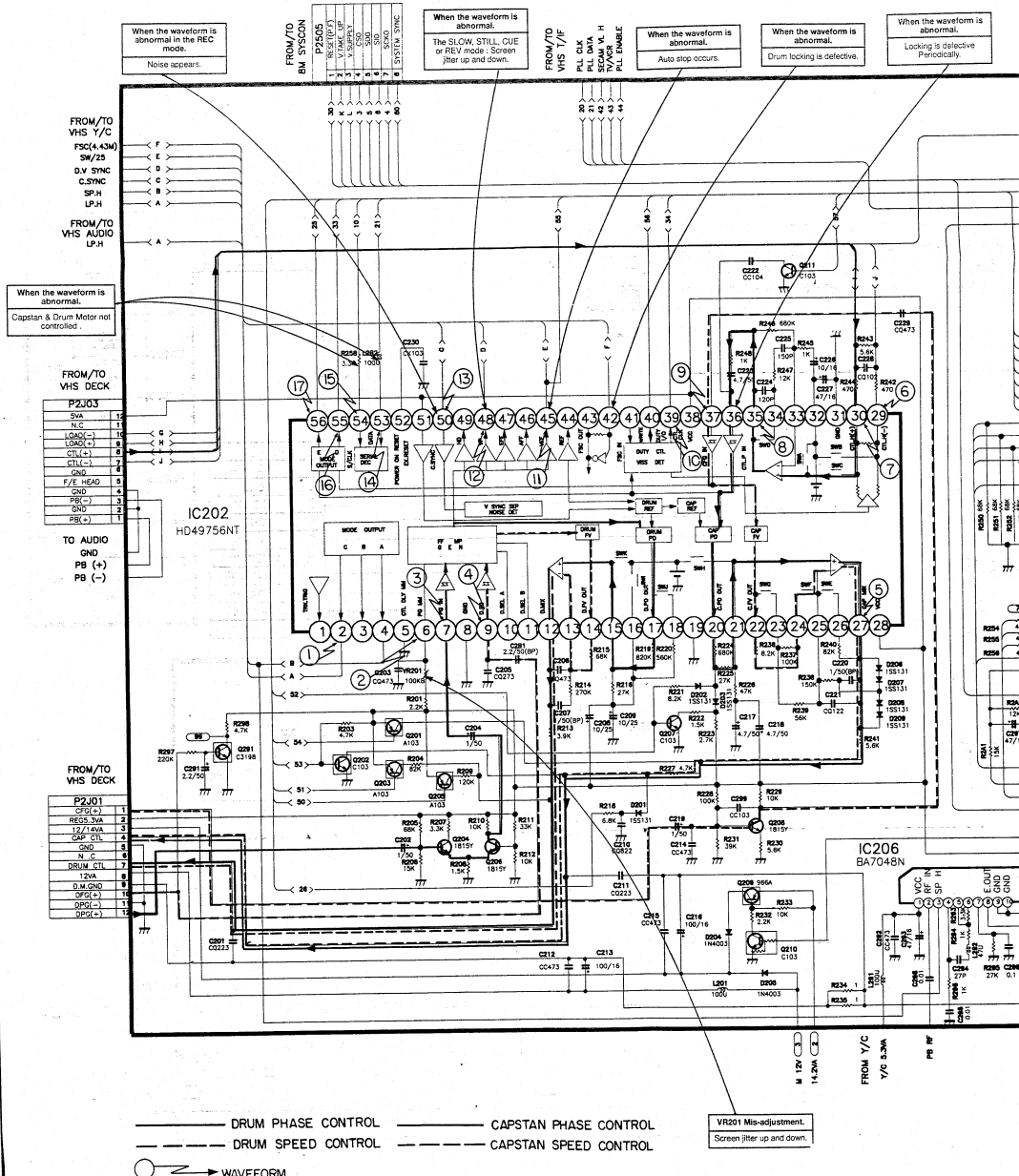
PLAYBACK MODE	3.6	0	0	5	0	0.2	2.1	0	2.7	2.7	2.7	1.4	2.5	2.5	2.5	2.5	2.5	2.4	0	2.5	2.5	2.5	2.5	2.5	2.7	2.7	5
RECORD MODE	3.6	0	0	5	0	0.2	2.1	0	2.7	2.7	2.7	1.4	2.5	2.5	2.5	2.5	2.5	2.4	0	2.5	2.5	2.5	2.5	2.5	2.6	2.7	5

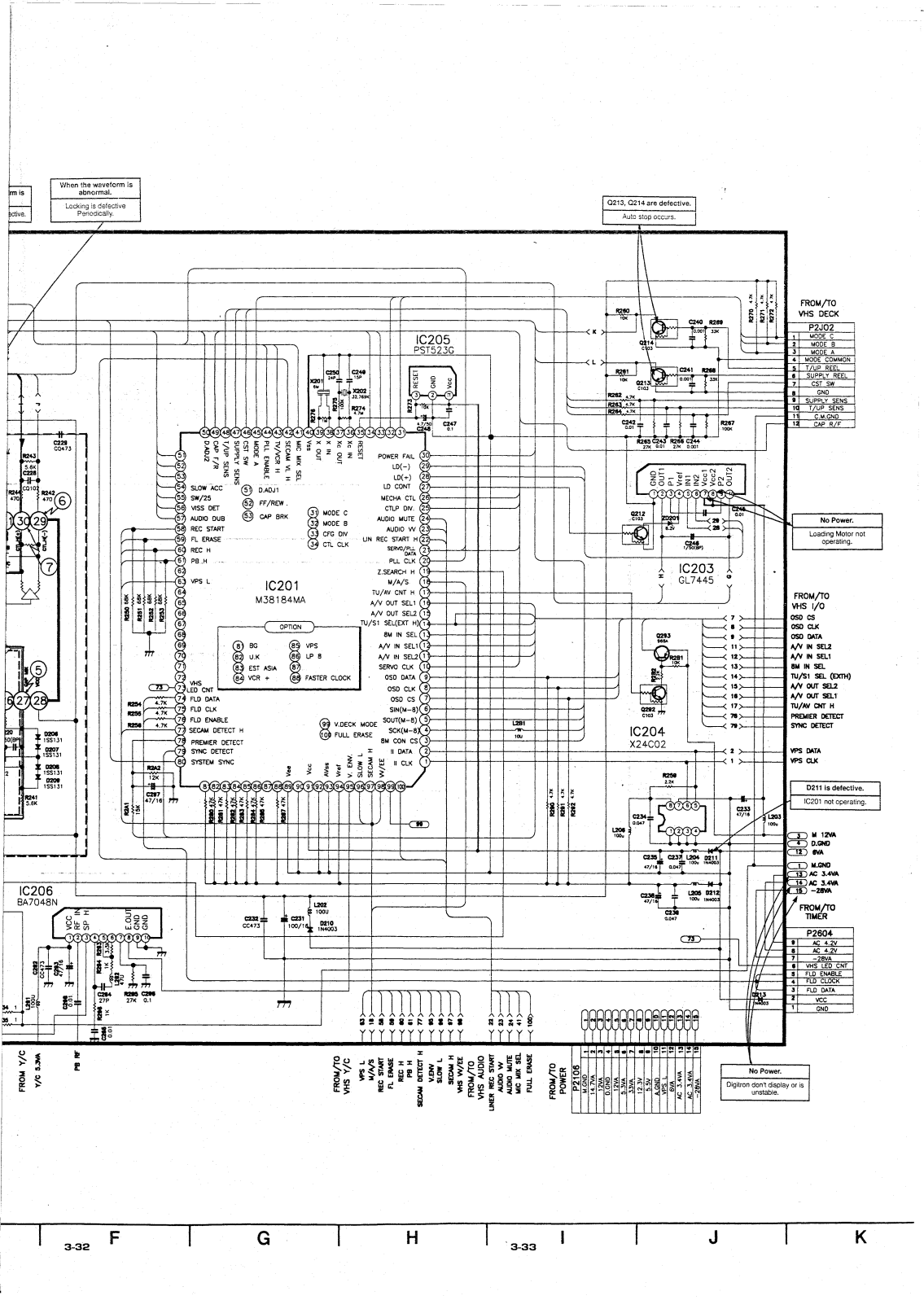
*SERVO TR Voltage Sheet

(PB/REC Mode)

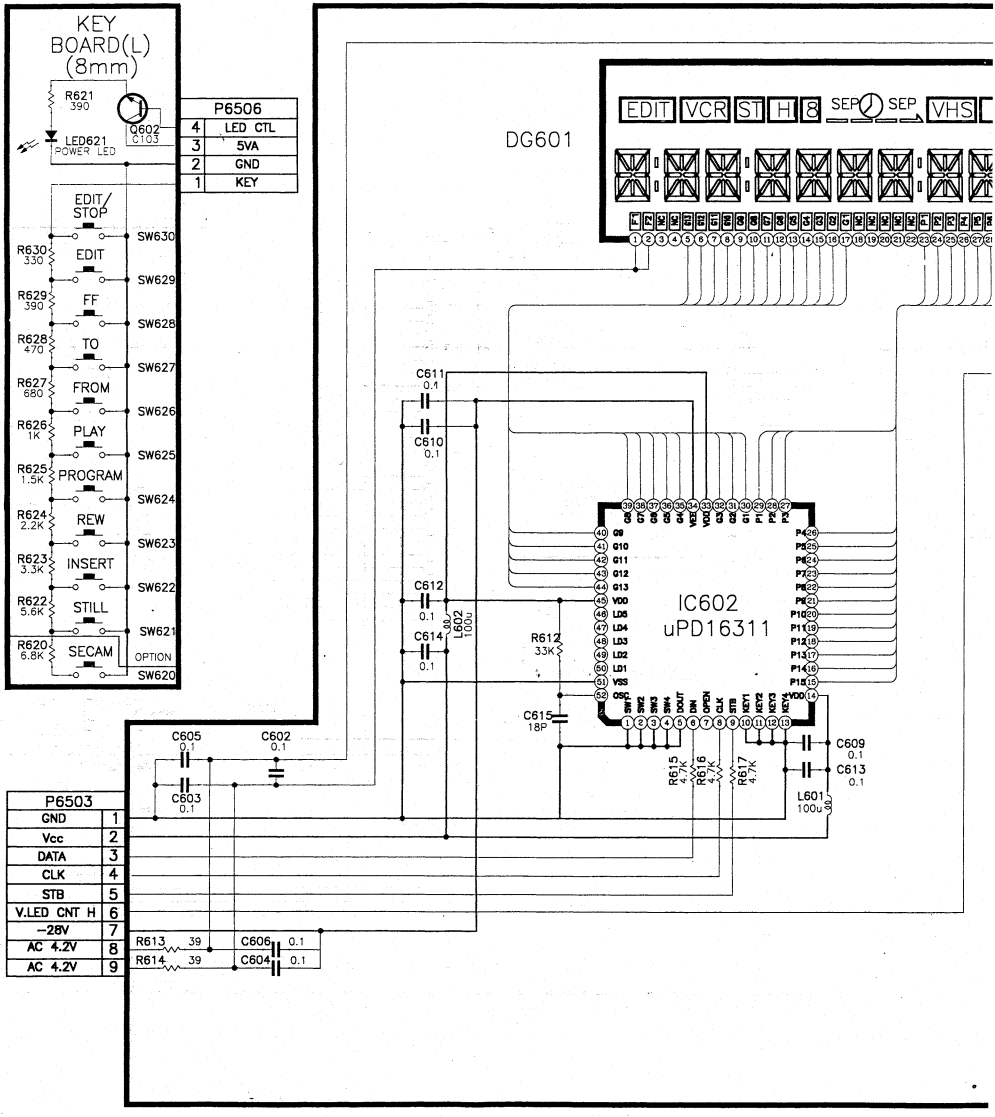
PORT / TR. NO.	EMITTER	COLLECTOR	BASE
Q201	5/5	2.2/2.2	5/5
Q202	0/0	2.2/2.2	0/0
Q203	5/5	1.2/1.2	5/5
Q205	5/5	1.2/1.2	5/5
Q207	0/0	5/5	0/0
Q211	0/0	0/0	0/0

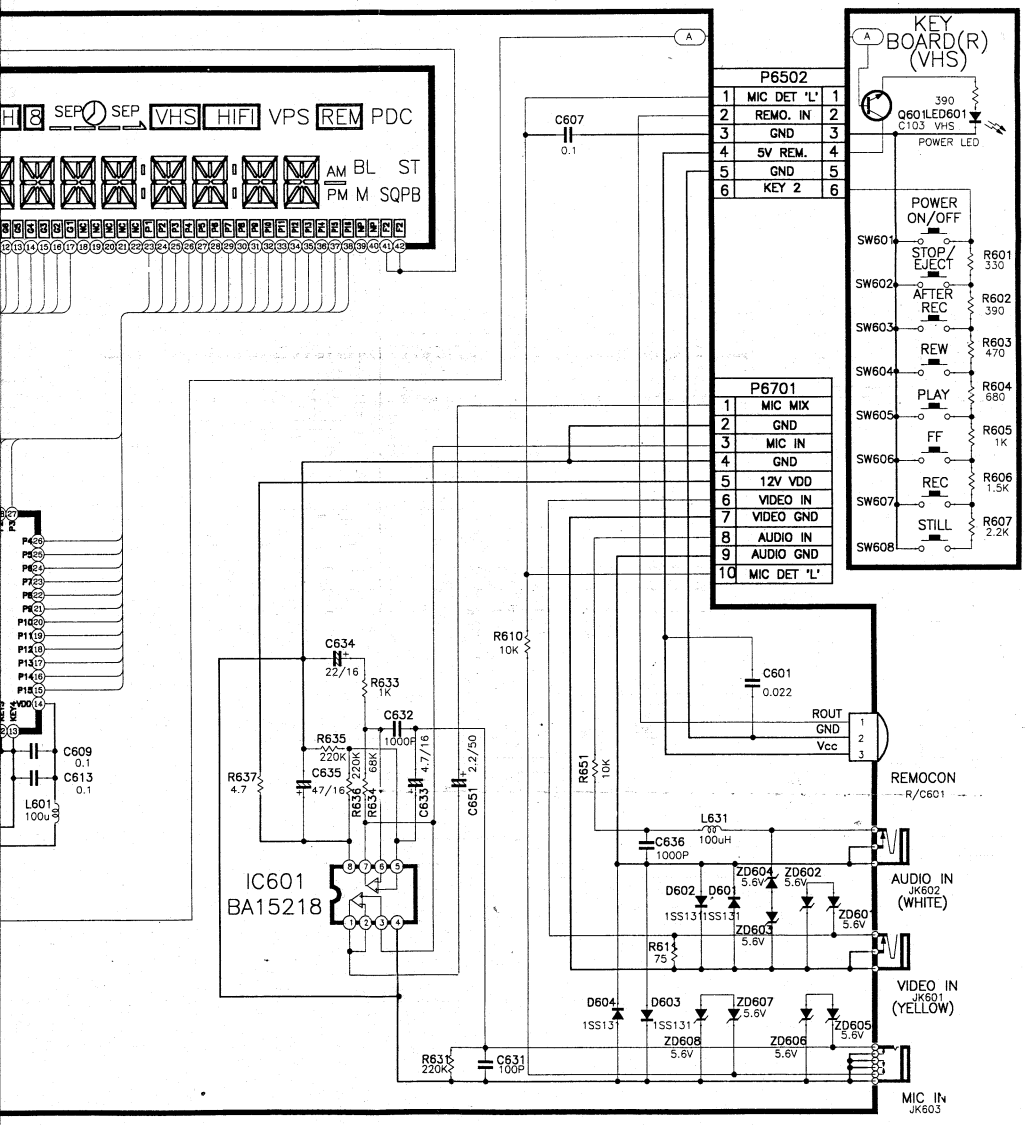
1-2. Main System (Servo, Syscon) Circuit Diagram



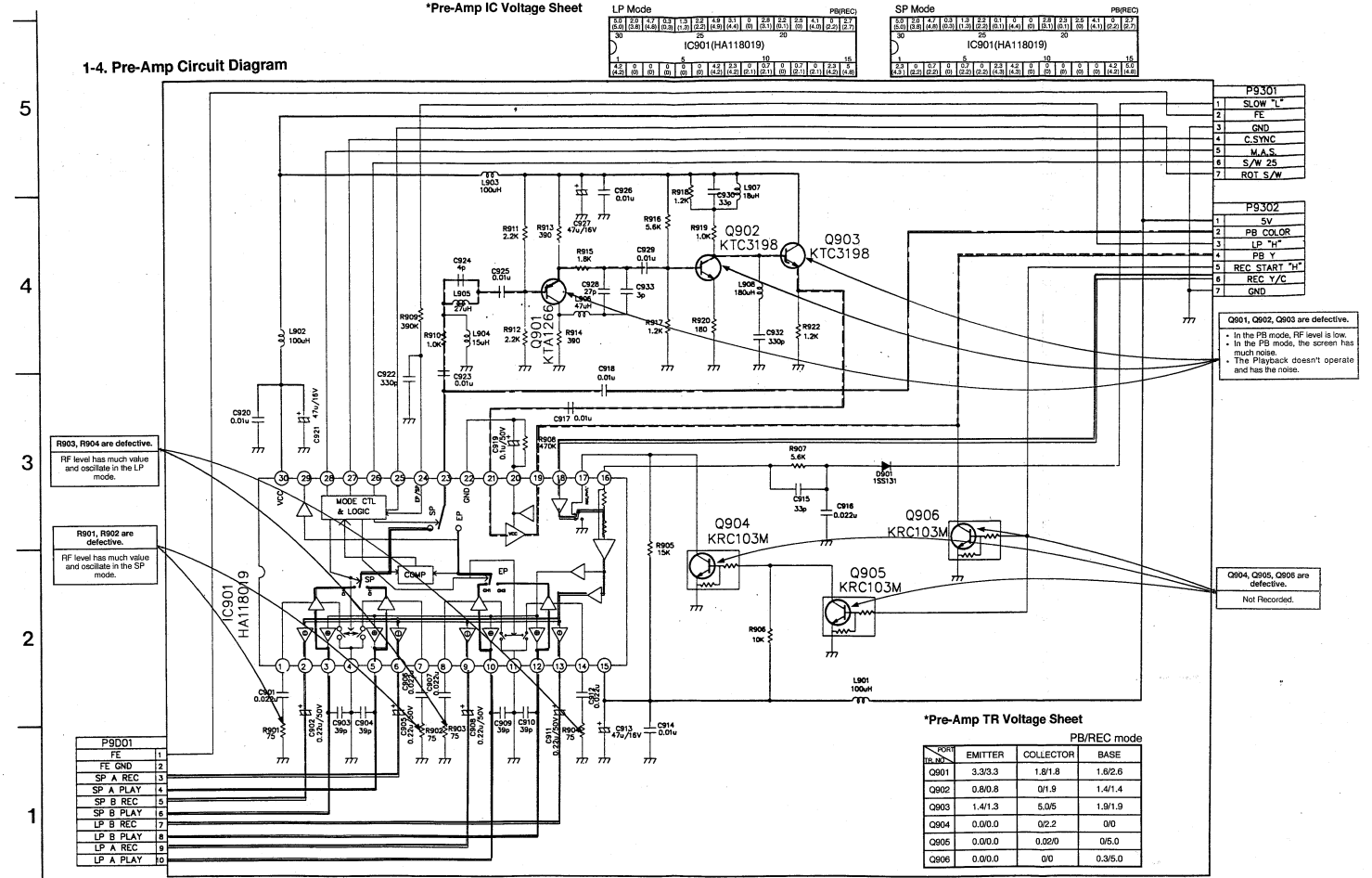

When the weveform is abnormal.
Locking is defective Periodically.
Q213, Q214 are defective.
Auto stop occurs.
IC205
PST523G
IC201
M38184MA
IC203
GL7445
IC204
X24C02
IC206
BA7048N
OPTION
FROM/TO VHS DECK
P2J02
MODE C
MODE B
MODE A
MODE COMMON
T/UP REEL
SUPPLY REEL
CST SW
GND
SUPPLY SENS
T/UP SENS
C.M.GND
CAP R/F
No Power.
Loading Motor not operating.
FROM/TO VHS I/O
OSD CS
OSD CLK
OSD DATA
A/V IN SEL2
A/V IN SEL1
8M IN SEL
TU/S1 SEL (EXTH)
A/V OUT SEL2
A/V OUT SEL1
TU/8V CNT H
PREMIER DETECT
SYNC DETECT
VPS DATA
VPS CLK
D211 is defective.
IC201 not operating.
M 12VA
D.GND
8VA
M.GND
AC 3.4VA
AC 3.4VA
-28VA
FROM/TO TIMER
P2604
AC 4.2V
AC 4.2V
-28VA
VHS LED CNT
FLD ENABLE
FLD CLOCK
FLD DATA
VCC
GND
No Power.
Digitron don't display or is unstable.
FROM/TO POWER
P2106
FROM/TO VHS Y/C
FROM/TO VHS AUDIO
FROM Y/C
Y/C 5.3VA
PB RF
3-32
3-33
F
G
H
I
J
K

1-3. Timer/Key Function Circuit Diagram




P6502
1 MIC DET 'L' 1
2 REMO. IN 2
3 GND 3
4 5V REM. 4
5 GND 5
6 KEY 2 6
P6701
1 MIC MIX
2 GND
3 MIC IN
4 GND
5 12V VDD
6 VIDEO IN
7 VIDEO GND
8 AUDIO IN
9 AUDIO GND
10 MIC DET 'L'
KEY BOARD(R) (VHS)
POWER ON/OFF
STOP/ EJECT
AFTER REC
REW
PLAY
FF
REC
STILL
SW601
SW602
SW603
SW604
SW605
SW606
SW607
SW608
R601 330
R602 390
R603 470
R604 680
R605 1K
R606 1.5K
R607 2.2K
390
Q601LED601
C103 VHS
POWER LED
C607 0.1
C634 22/16
R633 1K
C632 1000P
R635 220K
C635 47/16
R637 4.7
R636 220K
R634 68K
C633 4.7/16
C651 2.2/50
R610 10K
R651 10K
C601 0.022
ROUT
GND
Vcc
REMOCON
R/C601
L631 100uH
C636 1000P
IC601
BA15218
ZD604 5.6V
ZD602 5.6V
D602 1SS131
D601 1SS131
ZD603 5.6V
ZD601 5.6V
R611 75
AUDIO IN JK602 (WHITE)
VIDEO IN JK601 (YELLOW)
D604 1SS131
D603 1SS131
ZD607 5.6V
ZD608 5.6V
ZD606 5.6V
ZD605 5.6V
R631 220K
C631 100P
MIC IN JK603
C609 0.1
C613 0.1
L601 100u
SEP SEP VHS HIFI VPS REM PDC
AM BL ST
PM M SQPB

1-4. Pre-Amp Circuit Diagram

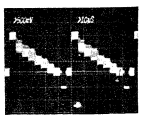


*Pre-Amp TR Voltage Sheet

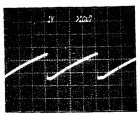
PB/REC mode

PORT / TR. NO.	EMITTER	COLLECTOR	BASE
Q901	3.3/3.3	1.8/1.8	1.6/2.6
Q902	0.8/0.8	0/1.9	1.4/1.4
Q903	1.4/1.3	5.0/5	1.9/1.9
Q904	0.0/0.0	0/2.2	0/0
Q905	0.0/0.0	0.02/0	0/5.0
Q906	0.0/0.0	0/0	0.3/5.0

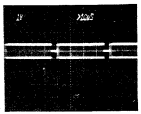
• Y/C Oscilloscope Waveform

① 

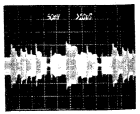
IC301 ㉘ PIN
Secam REC/PB
VIDEO OUTPUT

② 

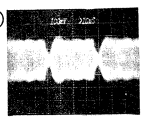
IC302 ㉕ PIN
Secam REC/PB
Gate Timing

③ 

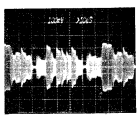
IC302 ㉕ PIN
Secam PB Gate
Timing Output

④ 

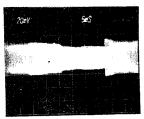
IC302 ⑤ PIN
REC Bell
Adjustment

⑤ 

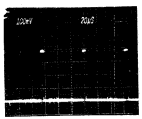
IC302 ⑤ PIN
PB input Bell
Adjustment

⑥ 

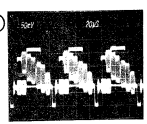
IC302 ⑩ PIN
PB out Bell
Adjustment

⑦ 

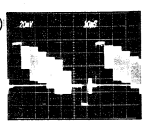
P3P02 ② PIN
PB Color Signal

⑧ 

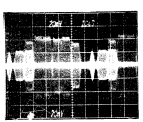
IC301 ㉘ PIN
C.SYNC

⑨ 

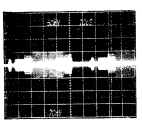
IC301 ㉘ PIN
PAL REC/PB
Video Output

⑩ 

IC301 ㉛ PIN
PAL Video Input

⑪ 

IC305 ⑩ PIN
PAL PB Color Signal

⑫ 

IC305 ⑦ PIN
PAL RECORD
Color Signal

*Y/C TR Voltage Sheet

PB/REC Mode

PORT / TR NO.	EMITTER	COLLECTOR	BASE	REMARK
Q301	0/0	0/0	0/0	SP Mode
	0/0	0/0	4.7/4.8	LP Mode
Q302	1.5/1.6	5.1/5.0	2/2.1	
Q303	0/0	0/0	0/0	
Q304	3.6/3.0	0/0	3/2.4	
Q305	4.2/3.7	0/0	3.6/3.0	
Q306	0/0	0/0.5	5/0.2	
Q307	0/0	4.6/4.6	0.6/0.5	
Q308	1.2/0	5/0.2	1.8/0.1	
Q309	2.8/0	5/0.2	3.4/0.1	
Q310	0.9/0	1.5/0.2	1.5/0.1	
Q311	1/0	5/0.2	1.5/0.2	
Q312	0/0	0/5	5/0	
Q313	5.1/5.1	5/0.2	4.3/5.1	
Q314	1/0.6	0/0	0.4/0	
Q315	2/0.2	0/0	0/0	
Q316	2.8/0	0/0.2	3.4/0	
Q317	0/2.7	0.5/5	0/3.27	
Q318	0/0	0/0	0/0	
Q319	5.1/5.1	0/4.9	5.1/4.3	
Q320	0/0	5.1/0	0/5	
Q321	11.6/11.6	0/0	11.6/11.6	
Q322	0/0	11.6/11.6	0/0	
Q323	0.5/0.1	11.6/11.6	0/0	
Q324	0/0	0/0	0/0	
Q325	0/0.16	0/0	0/0	
Q326	0.2/0	0.2/0	4.95/0	

*Y/C IC Voltage Sheet

PAL Mode — PB(REC)

5.1 (5.0)	5.1 (5.0)	0 (0.1)	0 (0)	0 (0)	4.0 (3.6)	0 (0)	3.9 (3.58)	0 (0)	
15								10	
IC303(BA7025L)									
1				5					
3.8 (3.8)	2.4 (0.2)	0 (0)	3.7 (0)	4.5 (4.5)	0 (0)	4.7 (0)	0 (0)	3.1 (3.1)	

SECAM Mode — PB(REC)

5.1 (5.1)	5.1 (5.1)	4.5 (4.5)	0 (0)	4.3 (4.3)	3.6 (3.6)	4.4 (4.3)	3.6 (3.6)	0 (0)	
15								10	
IC303(BA7025L)									
1				5					
3.8 (3.8)	2.4 (0.2)	0 (0)	3.7 (3.7)	4.5 (4.5)	0 (0)	2.3 (1.7)	0 (0)	1.9 (3.1)	

PB(REC)

8 (0.2)	2 (0.1)	2 (0.2)	2 (0.3)	
IC304 (MSM7403RS)				5
1				
4.85 (0.2)	0 (0)	4.85 (0.2)	3.3 (0.1)	

PAL Mode — PB(REC)

2.5 (2.5)	0.6 (0.6)	3.7 (3.2)	3.3 (3.3)	1.4 (1.4)	3.3 (3.3)	0.6 (0.6)	5.0 (5.0)	2.0 (2.0)	0.1 (0.1)	0.5 (0.5)	4.1 (4.1)	5.0 (5.0)	2.0 (2.0)	2.0 (2.0)	2.5 (2.4)	3.3 (3.3)	3.3 (3.3)		
35						30					25					20			
IC301(LA7390)																			
1				5					10		Secam Mode	4.2 (1.6)			15				
2.3 (0)	3.1 (2.4)	2.4 (2.8)	4.5 (2.8)	4.5 (2.8)	4.3 (4.3)	2.5 (2.4)	3.2 (2.2)	2.1 (2.1)	0 (0)	2.0 (2.1)	2.5 (0.5)	2.2 (1.7)	3.0 (3.0)	2.3 (2.5)	2.2 (2.2)	3.8 (3.8)	2.6 (3.4)		

SECAM Mode — PB(REC)

0 (2.5)	0 (0)	3.1 (3.1)	3.1 (3.1)	5.1 (5.1)	3.3 (3.3)	0.2 (0.2)	0.5 (0.5)	1.0 (1.0)	1.4 (1.7)	1.3 (1.1)	3.8 (0.3)	2.1 (0.2)	3.3 (0.5)	2.5 (0)			
30					25					20							
IC302(BA7107S)																	
1				5					10						15		
2.8 (2.7)	0 (3.3)	0.5 (5.0)	0 (2.0)	1.3 (1.2)	0.5 (3.3)	0.2 (1.7)	2.4 (2.5)	1.1 (1.7)	2.3 (0)	2.9 (0.4)	3.9 (2.7)	1.4 (0)	3.8 (0.2)	5.0 (0.2)			

PAL Mode — PB(REC)

IC305(LA7222)

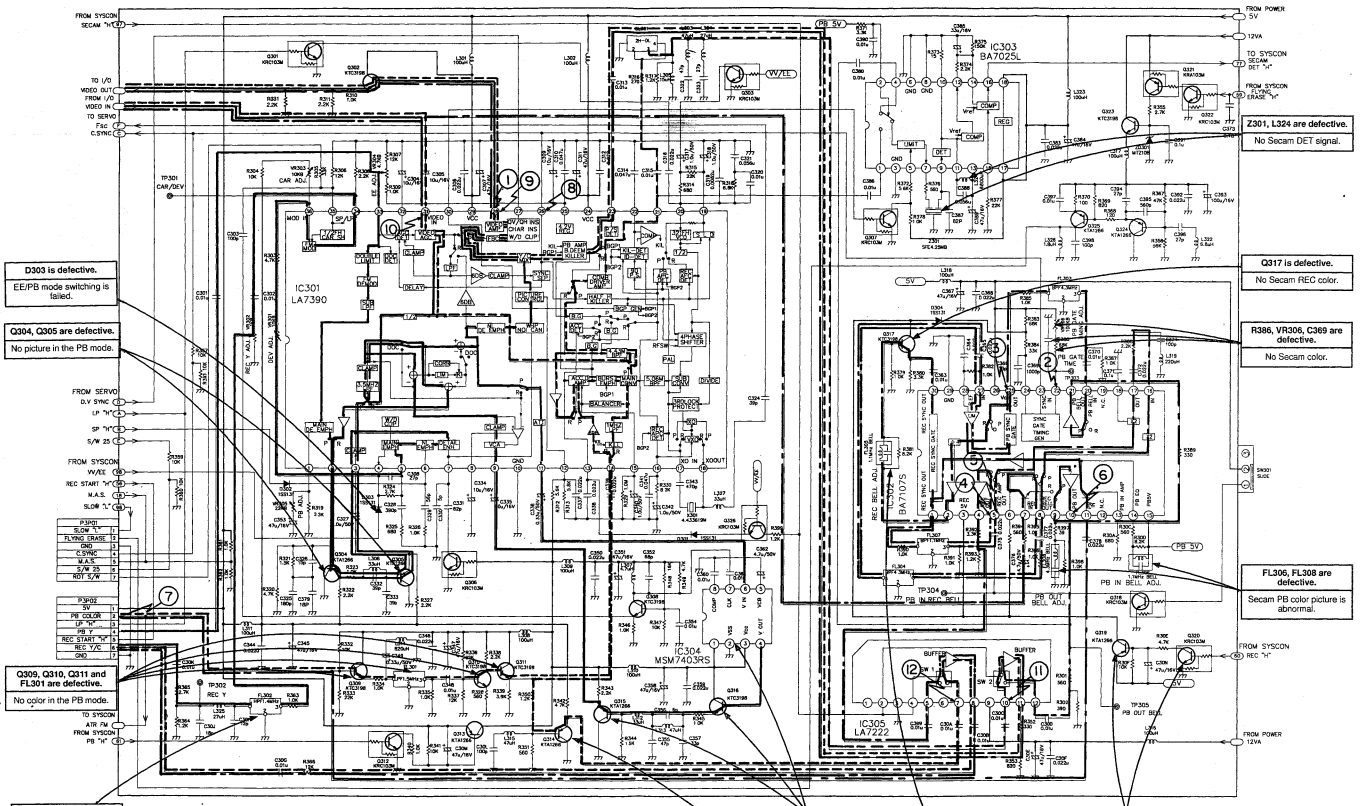
1				5					10
0 (0)	0.1 (0)	0 (0)	0.1 (0)	7.6 (7.7)	0.7 (0.1)	-7.6 (7.6)	7 (7)	11.7 (11.6)	7.6 (7.6)	6.9 (6.9)	7.6 (7.7)

SECAM Mode — PB(REC)

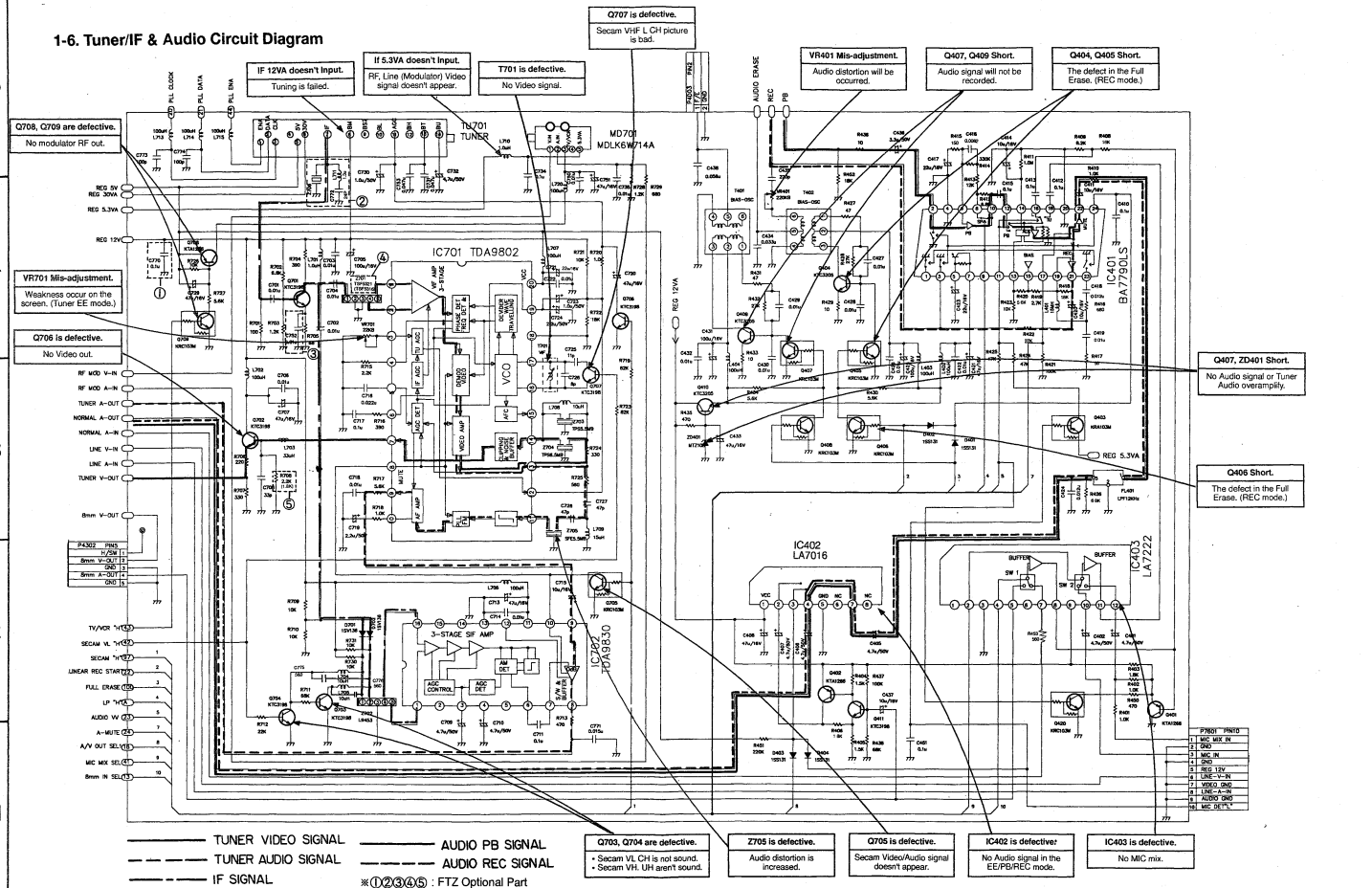
IC305(LA7222)

1				5					10
0 (0)	4.8 (4.8)	0 (0)	4.8 (4.8)	7.7 (7.7)	0.2 (0.1)	7.7 (7.7)	7 (7)	11.7 (11.6)	7.7 (7.7)	7 (6.9)	7.7 (7.7)

1-5. Y/C Circuit Diagram



1-6. Tuner/IF & Audio Circuit Diagram



***Tuner/IF TR Voltage Sheet**

PAL/SECAM

PORT / TR. NO.	EMITTER	COLLECTOR	BASE
Q701	1.1/1.1	5.5/5.5	1.8/1.8
Q702	1.6/1.7	12.0/12.0	2.2/2.3
Q703	0.0/0.0	0.0/0.0	0.6/0.6
Q704	0.0/0.0	10.5/10.5	0.0/0.0
Q705	0.0/0.0	3.2/0.0	0.0/4.8
Q706	0.0/0.0	4.6/0.0	0.0/0.6
Q707	2.6/2.6	0.5/0.5	0.0/0.0
Q708	5.0/5.0	4.6/4.6	4.2/4.2
Q709	0.0/0.0	0.0/0.0	5.0/5.0

***Tuner/IF IC Voltage Sheet**

PAL(SECAM) Mode

4.9 (4.9)	3.1 (2.9)	0.0 (0.0)	2.6 (2.6)	2.6 (2.6)	4.7 (4.7)	1.9 (2.0)	2.0 (2.0)	4.9 (5.3)	2.6 (2.6)
20					15				
IC701(TDA9802)									
1					5				10
3.3 (3.3)	3.3 (3.3)	0.8 (0.8)	0.2 (0.2)	3.1 (1.8)	2.5 (2.5)	2.2 (2.3)	3.2 (0.0)	2.0 (2.1)	1.5 (1.4)

PAL(SECAM) Mode

1.8 (1.8)	0.0 (0.0)	6.3 (6.3)	0.0 (0.0)	3.2 (3.2)	12.0 (12.0)	3.2 (0.0)	2.3 (2.3)
15						10	
IC702(TDA9830)							
1					5		
1.8 (1.8)	0.0 (0.0)	2.2 (2.1)	4.3 (4.3)	0.0 (0.0)	2.2 (2.2)	2.3 (2.3)	2.3 (2.3)

***Tuner**

Mode; PAL(11CH), SECAM(28CH)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PAL	0.1	0.1	0	0.1	5.0	31.2	0.0	12.0	0	0.0	5.0	11.8	19.0	0.0
SECAM	0.1	0.1	0.0	0.1	5.0	30.3	0.0	12.0	0.7	0.0	7.7	0.0	4.4	11.7

***Modulator**

	1	2	3	4	5
PAL	0.0	0.0	4.5	0.0	4.9
SECAM	0.0	0.0	4.5	0.0	4.9

***Audio TR Voltage Sheet**

PB/REC Mode

PORT / TR. NO.	EMITTER	COLLECTOR	BASE
Q401	0.0/7.5	0.0/0.0	7.0/6.9
Q402	11.6/11.5	7.4/7.3	10.9/10.8
Q403	4.7/4.7	4.8/0.4	4.6/4.6
Q404	0.0/0.4	8.9/8.8	0.0/0.8
Q405	0.0/0.0	0.0/0.8	7.3/0.0
Q406	0.0/0.0	7.3/0.0	0.0/4.6
Q407	0.0/0.0	0.0/0.9	7.4/0.0
Q408	0.0/0.0	7.4/0.0	0.0/4.9
Q409	0.0/0.5	9.0/8.8	0.0/0.9
Q410	9.0/8.9	11.6/11.5	9.5/9.5
Q411	4.0/4.0	11.0/10.8	4.6/4.5
Q420	0.0/0.0	0.0/7.5	4.9/0.0

***Audio IC Voltage Sheet**

PB(REC)

3.4 (3.4)	0.0 (0.0)	3.4 (3.4)	3.5 (3.5)	3.5 (3.5)	4.1 (4.1)	0.0 (0.0)	4.1 (4.1)	4.1 (4.1)	0.0 (0.0)	4.1 (4.1)	1.1 (4.7)
10									20		
IC401(BA7790LS)											
1				5				15			
0.0 (0.0)	0.0 (0.0)	8.8 (8.8)	8.9 (8.9)	0.0 (0.0)	4.9 (0.4)	2.6 (2.6)	4.1 (4.1)	0.0 (0.0)	4.1 (4.1)	4.1 (4.1)	0.0 (0.0)

PB(REC)

IC402(LA7016)							
1				5			8
11.6 (11.5)	7.6 (7.5)	0.3 (0.3)	6.9 (6.8)	0.0 (0.0)	0.0 (0.0)	7.6 (7.5)	0.0 (0.0)

PB(REC)

IC403(LA7222)												
1					5					10		
0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	7.7 (7.6)	0.0 (0.0)	7.7 (7.6)	7.0 (6.9)	11.6 (11.5)	7.7 (7.6)	7.0 (6.9)	7.7 (7.6)

***In/Out IC Voltage Sheet**

IC801(LA7954)

1				5				9	
4.3	0	0	4.9	0	4.9	11.7	4.9	5	TU
4.3	5	0	4.9	0	4.9	11.7	4.9	5	S1
4.3	0	5	4.9	0	4.9	11.7	4.9	5	S2
4.3	5	5	4.9	0	4.9	11.7	4.9	5	A/V

IC803(LA7954)

1				5				9	
4.2	0	0	4.9	0	4.9	11.7	4.9	5	TU
4.2	5	0	4.9	0	4.9	11.7	4.9	5	S1
4.2	0	5	4.9	0	4.9	11.7	4.9	5	S2
4.2	5	5	4.9	0	4.9	11.7	4.9	5	A/V

TITLE OFF (ON)

IC806(NJM2249L)

1				5			8
2.9 (2.9)	0 (1.5)	2.8 (2.8)	0 (1.1)	3.2 (3.2)	6.4 (6.4)	2.1 (2.1)	0 (0)

TU

IC802(LA7222)

1				5					10	
0	0	0	0	7.7	0	7.7	7	11.7	7.7	7	7.7

TU

IC804(LA7222)

1				5					10	
0	0	0	0	7.7	0	7.7	7	11.7	7.7	7	7.7

TU

IC805(NJM2245S)

1			5				9
8	11.7	0	6.1	0	7.9	0	8	0

TU

0.3	4.8	0	4.1	1.8	0.6	0.1	0.2

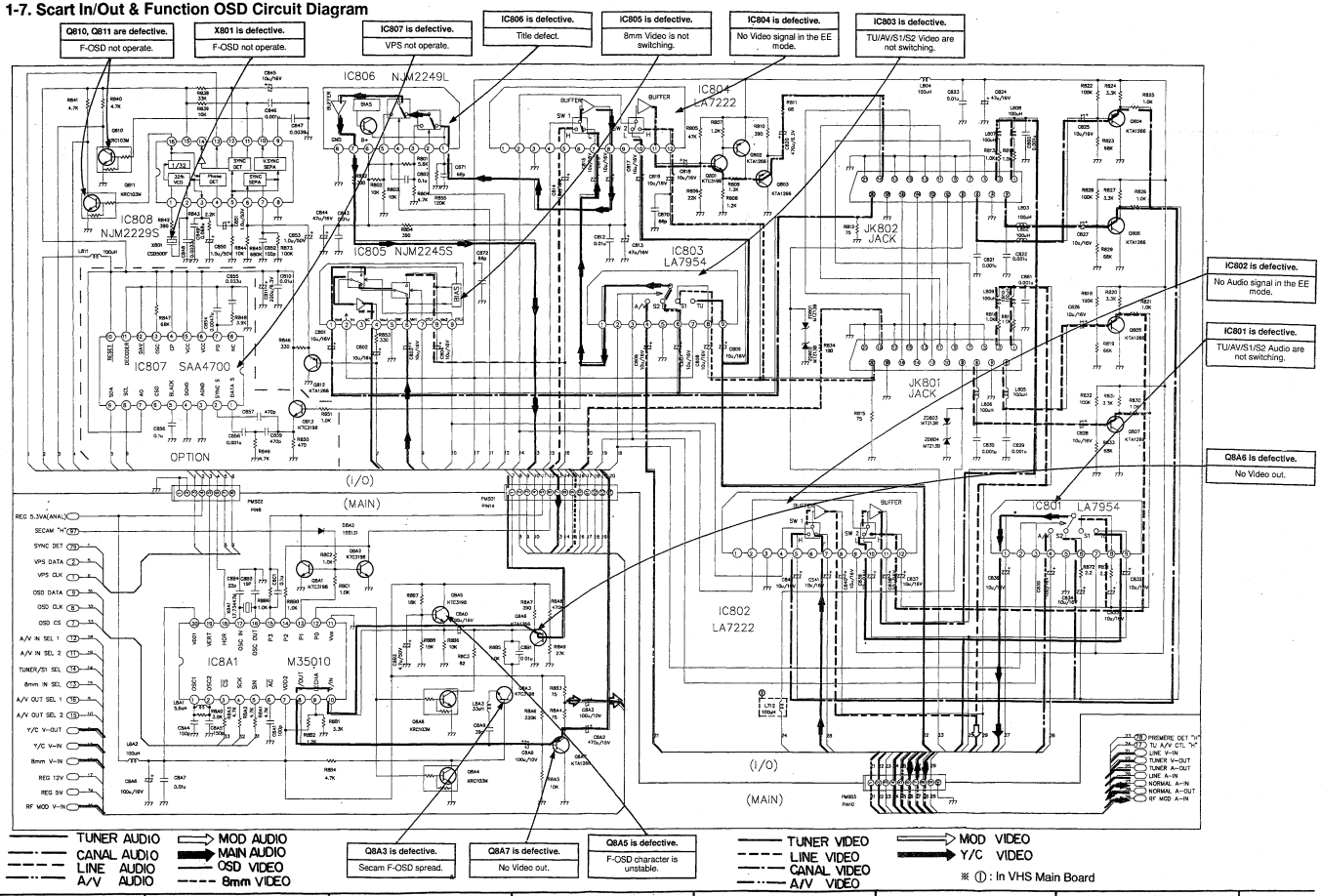
15 10

IC808(NJM2249S)

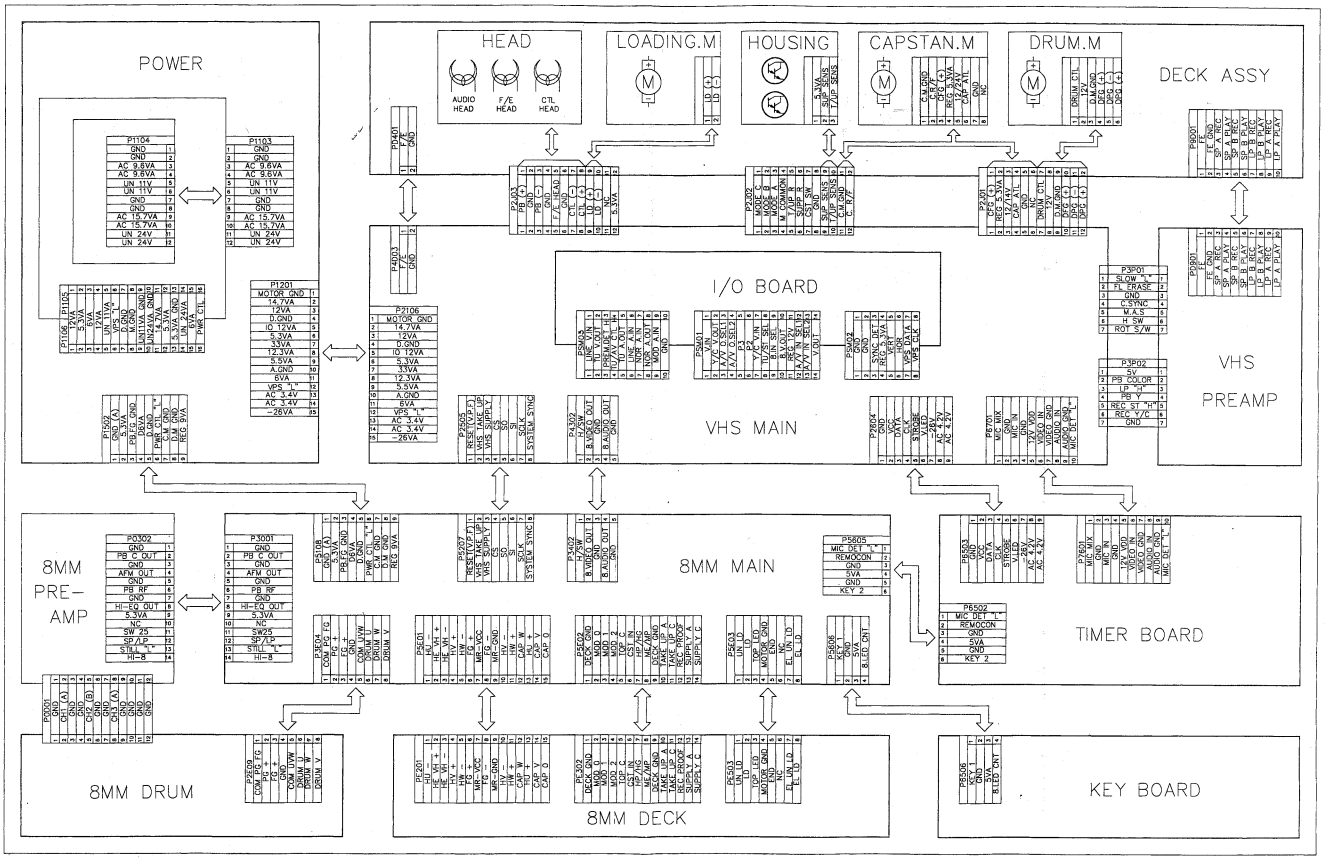
1 5

2.5	2	2.1	0	0.5	3.7	2.9	0

1-7. Scart In/Out & Function OSD Circuit Diagram



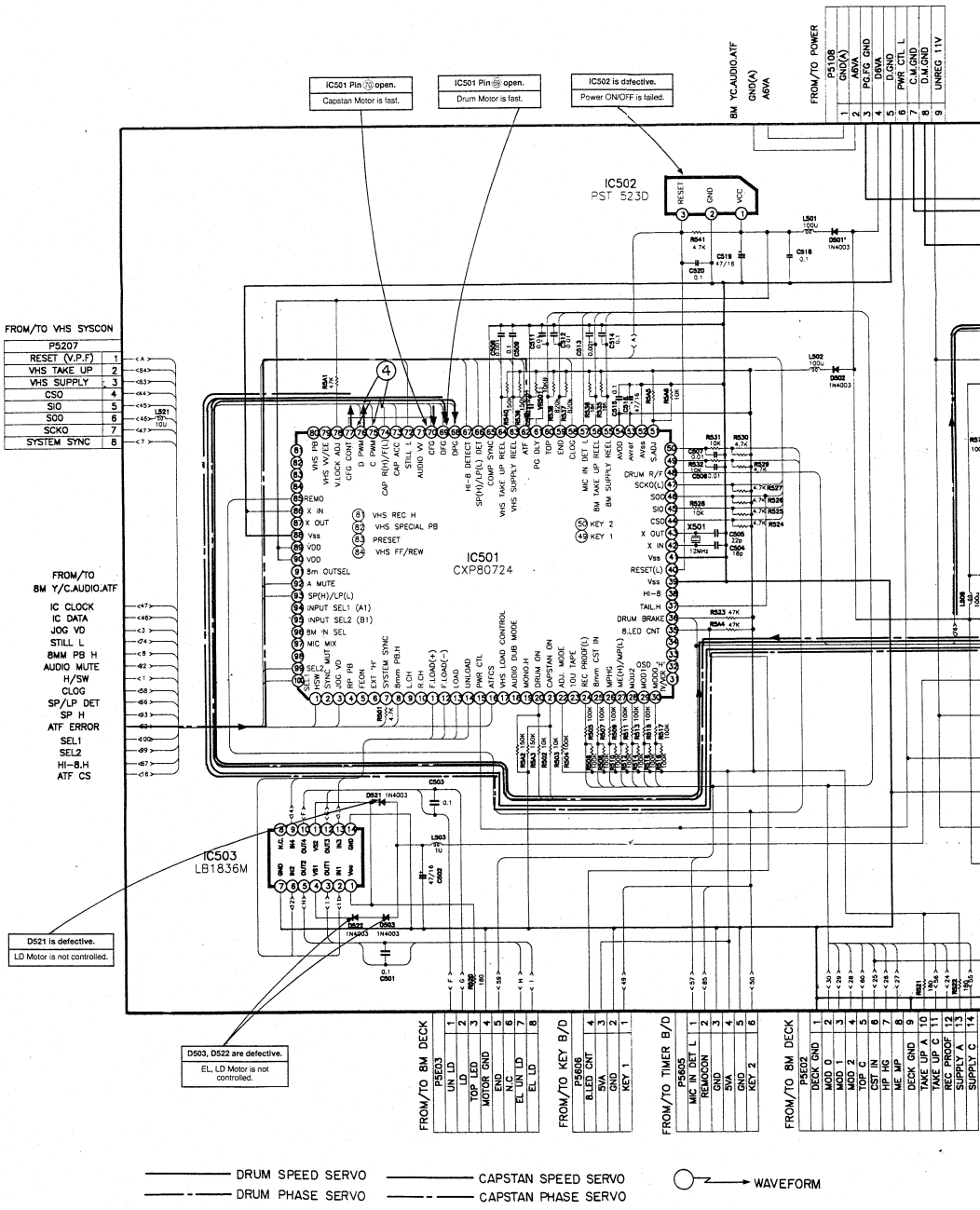
1-8. Connection Diagram



2. 8mm Circuit Diagrams

2-1. Main System (Servo, Syscon) Circuit Diagram

• 8mm Main Syster
Waveform



• 8mm Main System Waveform

① 25Hz

(UP) HSW
(DOWN) DPG
IC506 ⑨

② 460Hz

DFG
IC506 ⑩

③ 1.53kHz

CFG
IC506 ⑫

④ 47kHz

(UP) D PWM
IC501 ⑯
(DOWN) C PWM
IC501 ⑮

⑤ 179.8688 kHz

(UP) Drum U
IC507 ⑲
(MIDDLE) Drum V
IC507 ⑰
(DOWN) Drum W
IC507 ⑮

P5108	
1	GND(A)
2	A6VA
3	PG.FG GND
4	D6VA
5	D.GND
6	PWR CTL
7	C.M.GND
8	D.M.GND
9	UNREG 11V

Q509, Q510 are defective.
Drum Motor is fast or slow.

FROM/TO 8MM D.MOTOR

P5E04	
8	DRUM V
7	DRUM W
6	DRUM U
5	COM U/W
4	SEA GND
3	FG +
2	PG +
1	COM PG FG

FROM/TO 8MM DECK

P5E01	
1	HU –
2	HE VH +
3	HE VH –
4	HV +
5	HW –
6	FG +
7	MR–VCC
8	FG –
9	MR–GND
10	HV –
11	HW +
12	CAP W
13	HU +
14	CAP V
15	CAP U

IC506 CXA1512M
IC507 GL7406
IC505 CXA1127M
IC504 GL358

C552, C553 are defective.
Color bend appears on the screen.

P5101	
1	MOD 0
2	MOD 1
3	MOD 2
4	TOP C
5	CST IN
6	HP HG
7	ME MP
8	DECK GND
9	TAKE UP A
10	TAKE UP C
11	REC PROOF
12	SUPPLY A
13	SUPPLY C

Q503 is defective.
Tape is not loaded.

Q505, Q506 are defective.
Capstan Motor is fast or slow.

*8mm Main System IC Voltage Sheet

IC504 (GL358)

6	1.8	0.8	0.8	5
0.8	0.8	0.8	0.8	1

IC505(CXA1127M)

0	0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	2.2	0	0	1.3	0	0
30					25							20		
1				5					10					15
0	0	0	0	1.6	1.6	1.6	6	6	6	6	0	5	0	0

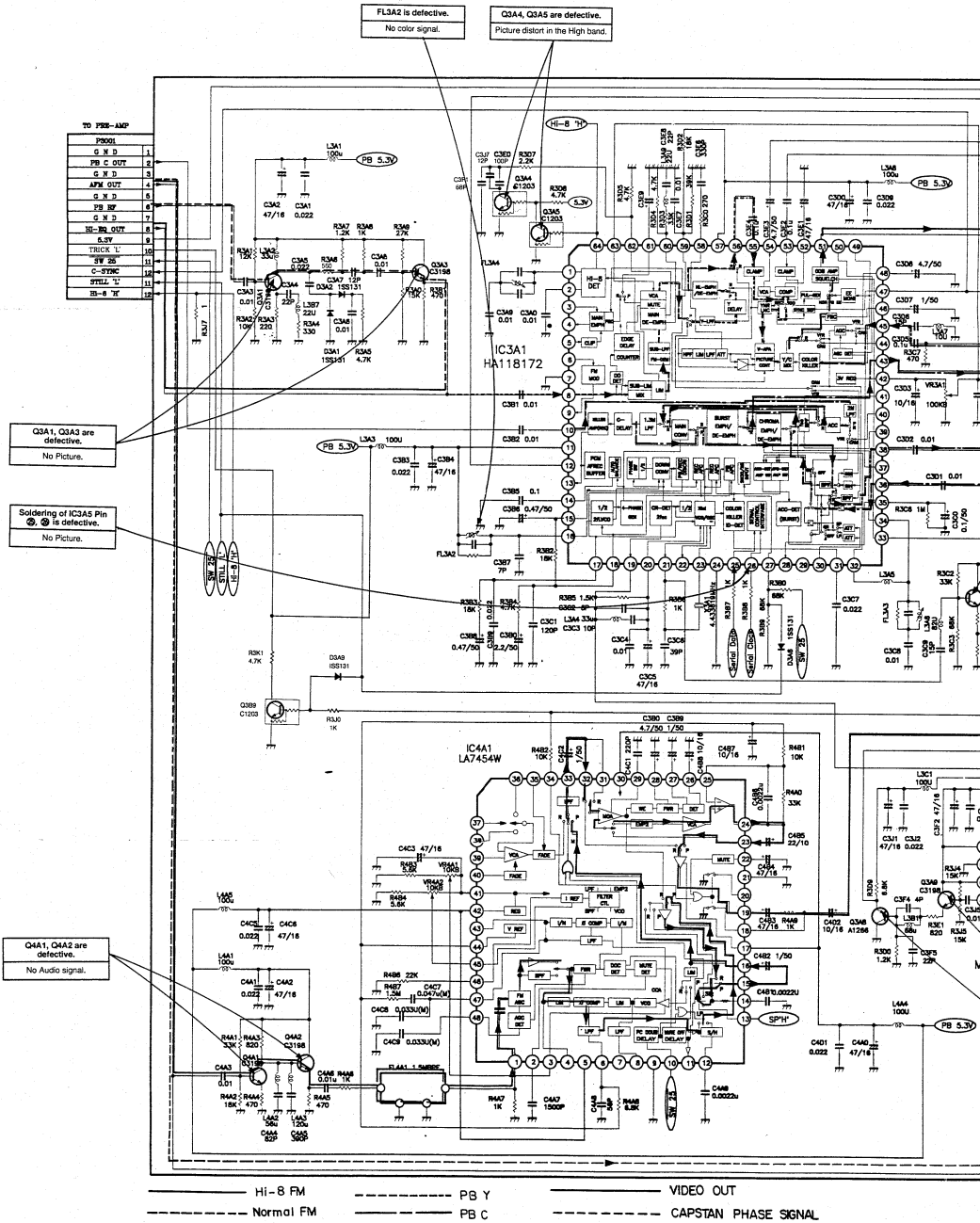
IC506(CXA1512M)

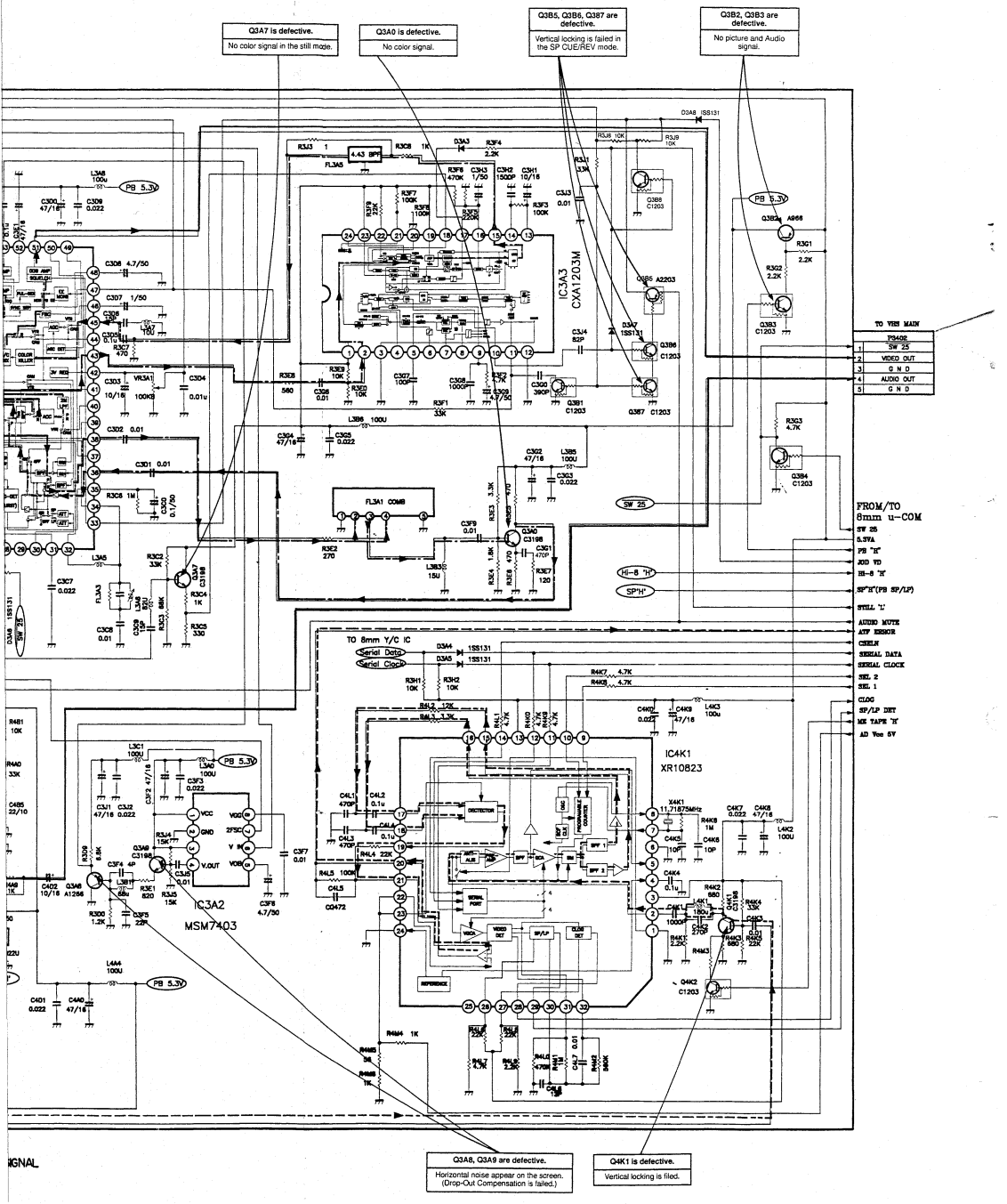
2.2	2.2	5	5.3	5	5	2	
14			10				
2	2	2	2	2	2	0	1

IC507(GL7406)

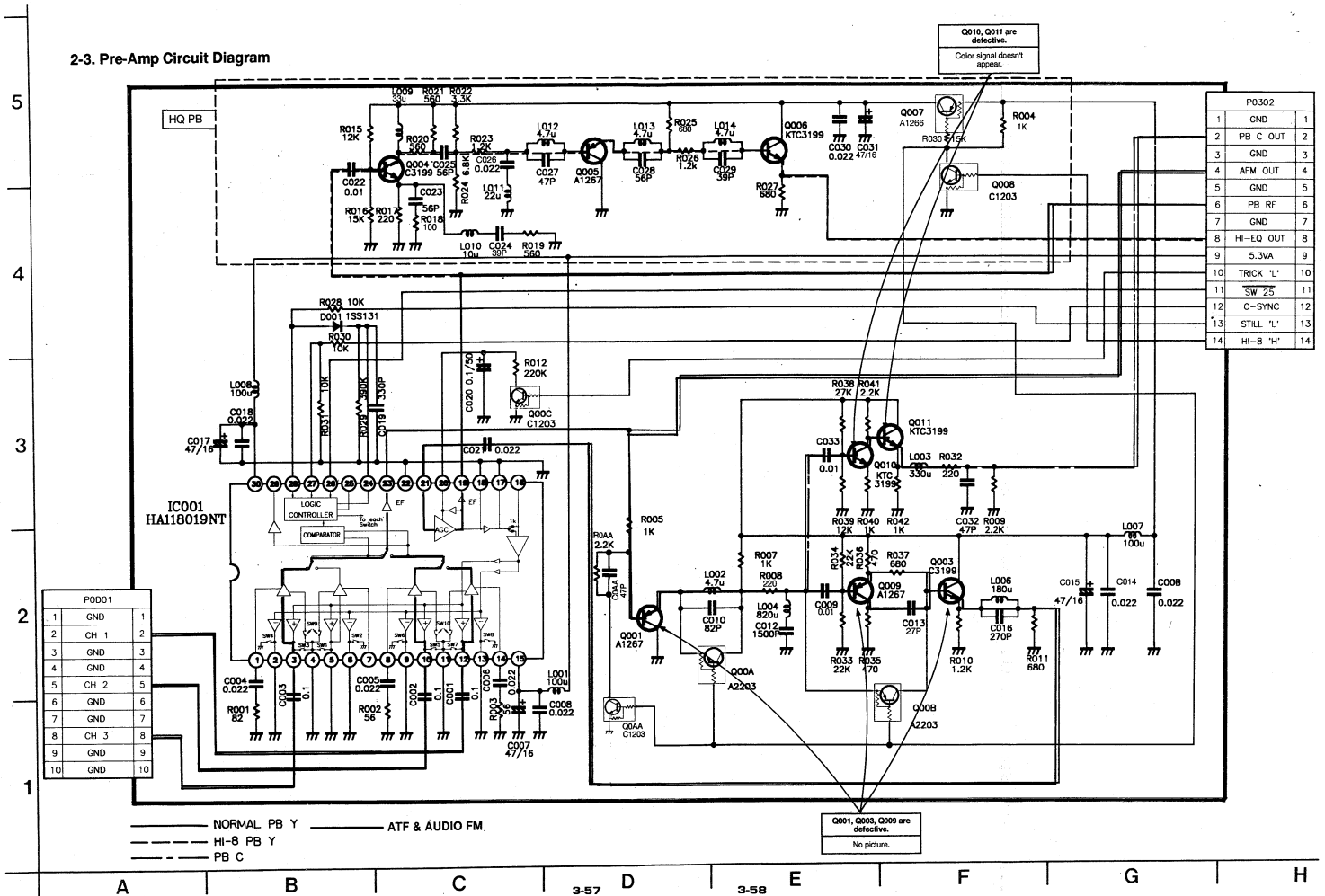
6	1.2	1.2	1.2	1.2	1.2	1.2	1.2	2.2	2.2	2.2	2.2	0	2.2	0	2.2
30					25							20			
1				5					10					15	
0.1	0	0	0	0	0	3.5	5.5	5.5	0	0	6	0	2.2	2.2	0

2-2. Main Analog (Y/C, Audio) Circuit Diagram




Q3A7 is defective.
No color signal in the still mode.
Q3A0 is defective.
No color signal.
Q3B5, Q3B6, Q3B7 are defective.
Vertical locking is failed in the SP CUE/REV mode.
Q3B2, Q3B3 are defective.
No picture and Audio signal.
IC3A3 CXA1203M
IC3A2 MSM7403
IC4K1 XR10823
TO VSS MAIN
P5402
SW 25
VIDEO OUT
G N D
AUDIO OUT
G N D
FROM/TO 8mm u-COM
SW 25
5.3V
PB "H"
XID VD
HI-8 "H"
SP"H"(PB SP/LP)
STILL "L"
AUDIO MUTE
ATF ERROR
CSELN
SERIAL DATA
SERIAL CLOCK
SEL 2
SEL 1
CLOG
SP/LP DET
ME TAPE "H"
AD Vcc 5V
TO 8mm Y/C IC
Serial Data
Serial Clock
Q3A8, Q3A9 are defective.
Horizontal noise appear on the screen. (Drop-Out Compensation is failed.)
Q4K1 is defective.
Vertical locking is filed.

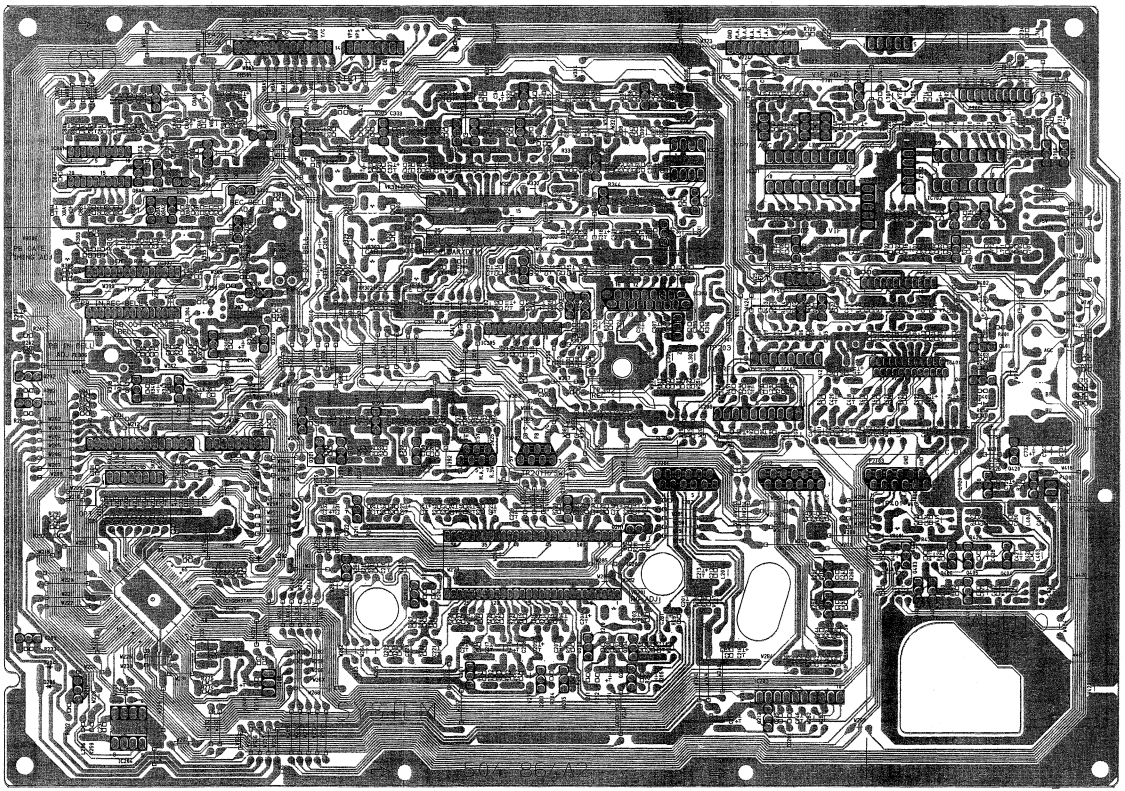
2-3. Pre-Amp Circuit Diagram



PRINTED CIRCUIT BOARD DIAGRAMS

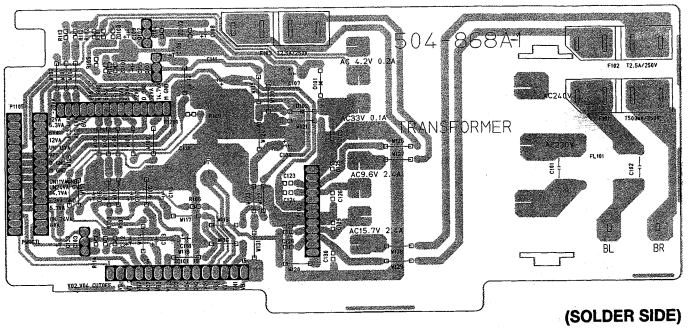
1. VHS Printed Circuit Board

1-1. Main P.C.Board



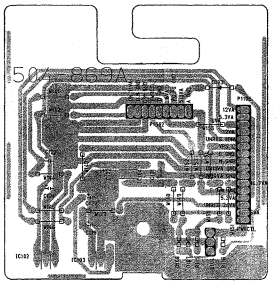
(SOLDER SIDE)

1-2. Power 1 P.C.Board



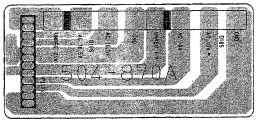
(SOLDER SIDE)

1-3. Power 2 P.C.Board



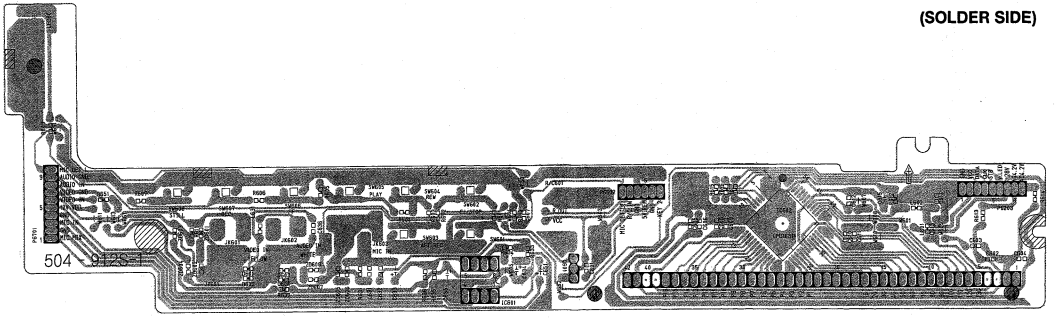
(SOLDER SIDE)

1-4. Power 3 P.C.Board



(SOLDER SIDE)

1-5. Timer (I) P.C.Board



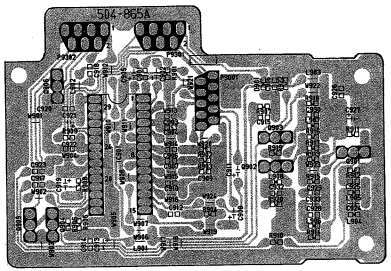
(SOLDER SIDE)

5 4 3 2 1

A B C D E F G

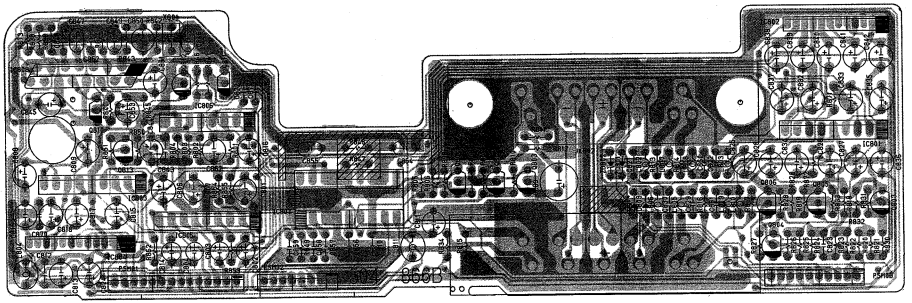
3-61 3-62

1-6. Pre-Amp P.C.Board



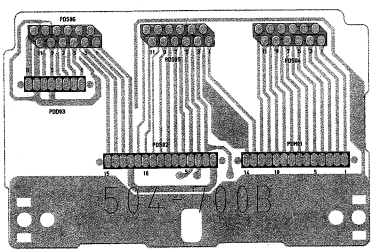
(SOLDER SIDE)

1-8. Scart In/Out P.C.Board

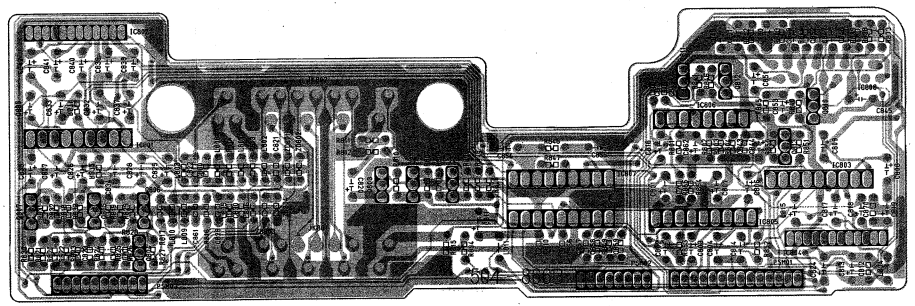


(PARTS SIDE)

1-7. Deck Junction P.C.Board



(SOLDER SIDE)



(SOLDER SIDE)

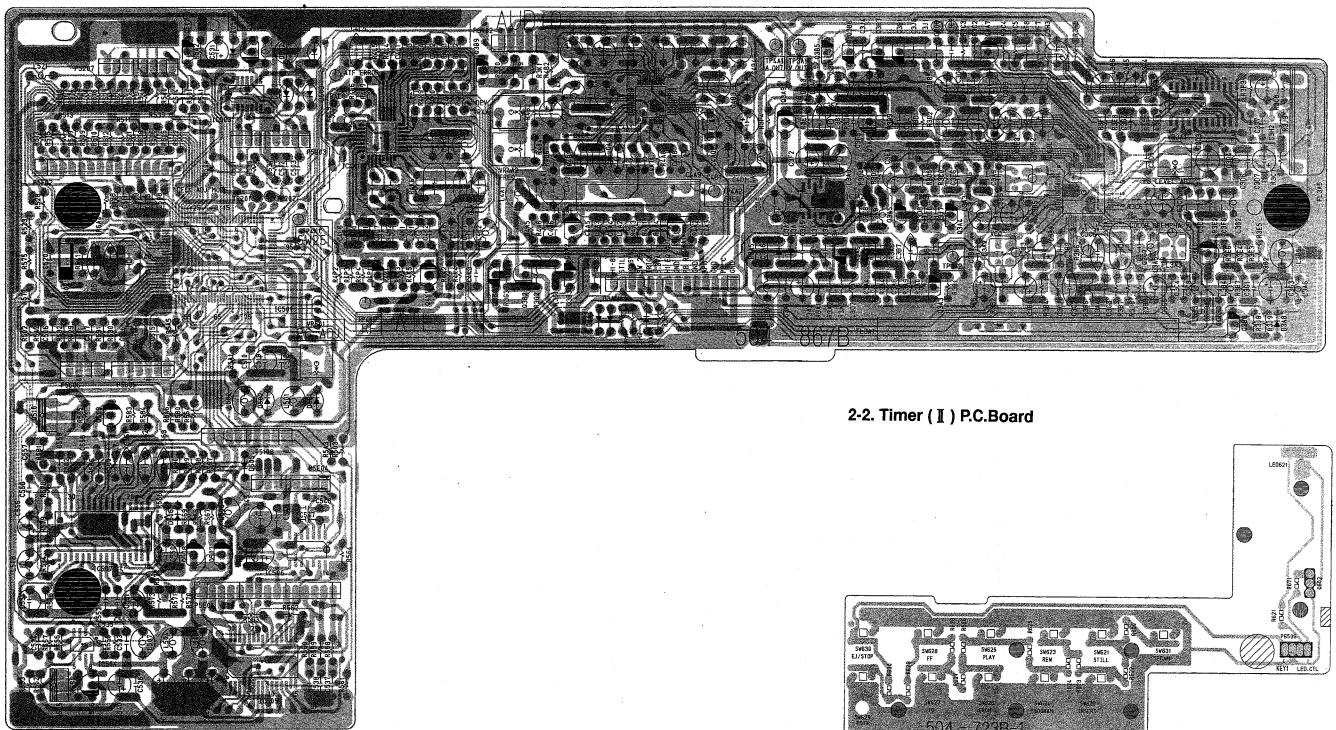
5 4 3 2 1

A B C D E F G H

3-63 3-64

2. 8mm Printed Circuit Board

2-1. Main P.C.Board

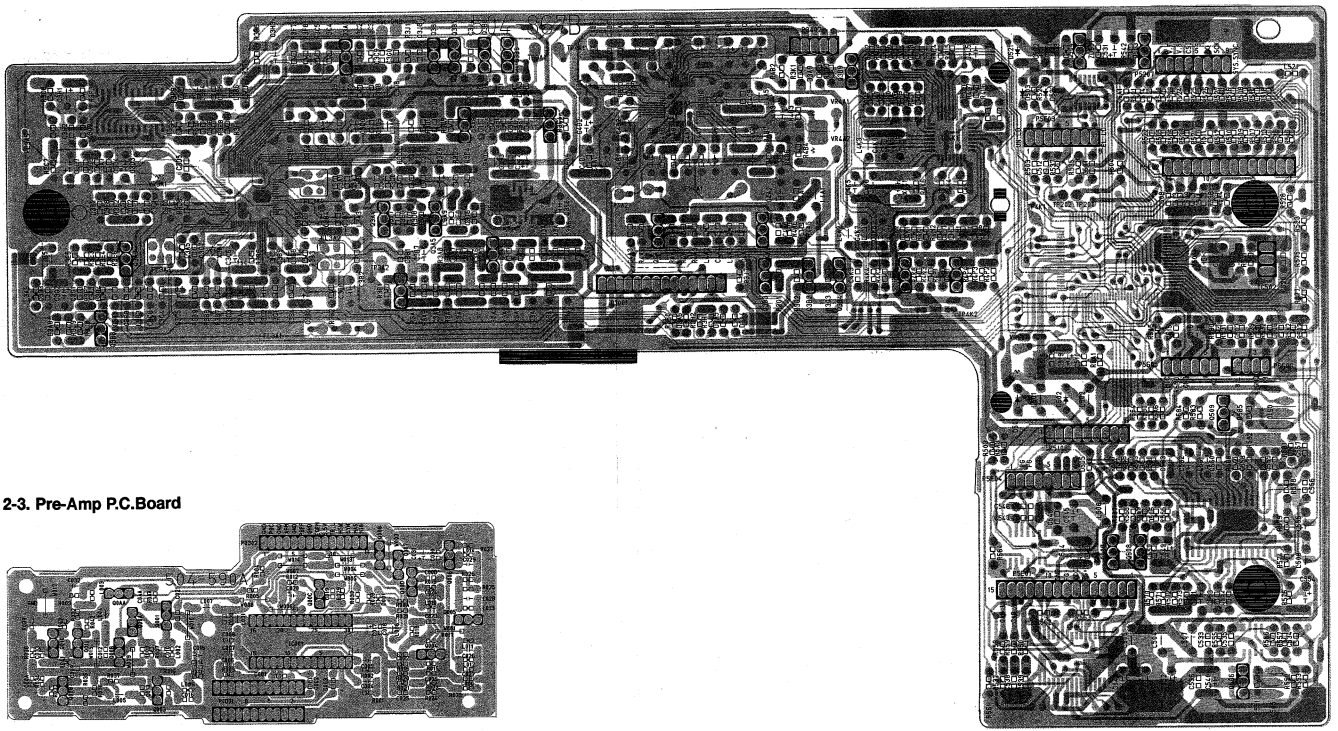


(PARTS SIDE)

2-2. Timer (Ⅱ) P.C.Board

(SOLDER SIDE)

Main P.C.Board

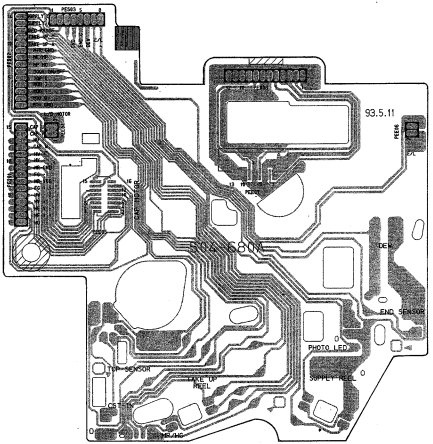


2-3. Pre-Amp P.C.Board

(SOLDER SIDE)

(SOLDER SIDE)

2-4. Deck Junction P.C.Board



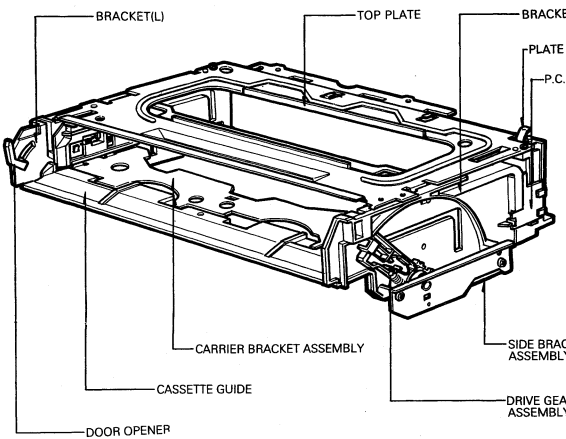
(SOLDER SIDE)

MEMO

SECTION 4-1. VHS DECK MECHANISM

FRONT LOADING MECHANISM DISASSEMBLY

• **Front Loading Mechanism Parts Location**



Front Loading Mechanism Parts Location

1. Component list below will be discribed as if the top and bottom covers and the front panel have already been removed.
2. P.C.B Assembly
3. Top Plate
4. Carrier Bracket Assembly
5. Cassette Guide
6. Side Bracket Assembly
7. Bracket(L), (R)
8. Door Opener
9. Drive Gear Assembly

1. Front Loading Mechanism Assembly (Fig. A-1-1)

1) Remove the Top and Bottom Covers and the Front panel.
2) Unplug the connector.
3) Remove two screws(A).
4) Lift up the Front Loading Mechanism in the direction of arrow(C).

*** NOTE**

1) When disassembling and reassembling
① Give special attention to removal. because two tabs(D) are engaged.
② Make sure that Bosses of Bracket(L),(R) are properly engaged in the holes of the chassis.
③ To reassemble Front Loading Mechanism, the Drive Gear Assembly should be turned in a counterclockwise as shown in Fig. A-1-2 so that the Rack Gear N.D of Front Loading Mechanism Assembly is meshed into Rack Gear F.L of Deck Mechanism Assembly correctly as shown in Fig. A-1-1.(B).

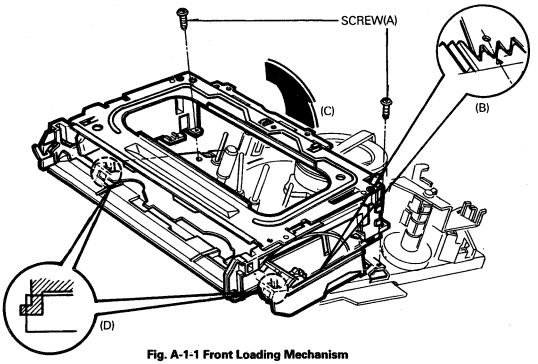


Fig. A-1-1 Front Loading Mechanism

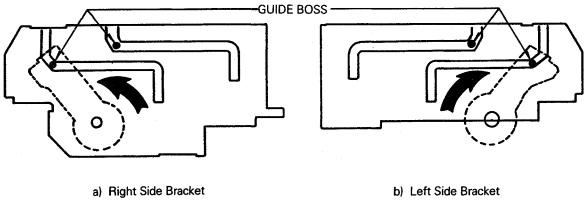


Fig. A-1-2 Carrier Bracket Assembly

2. PCB(Printed Circuit Board) Assembly

2-1. P.C.B Assembly(R)(Fig. A-2)

1) Remove the PCB Assembly(R) by pushing three Hooks (A) outward.
2) Release the Lead wire from stoppers.

2-2. PCB Assembly(L).(Fig. A-2)

1) Remove the PCB Assembly(L) by pushing the Hook(B) outward.
2) Release the Lead Wire from stoppers.

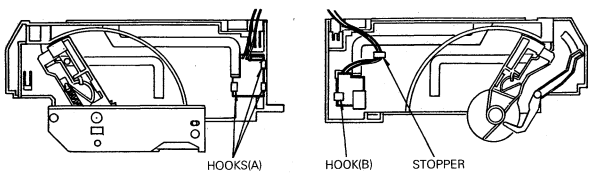


Fig. A-2 PCB Assembly

3. Top Plate(Fig. A-3)

1) Remove two screws(A).
2) Push the upper part of Top plate Ground and then lift up the Top Plate.

*** NOTE**

1) When reassembling, be certain that the tabs(C) of Top Plate is in both Bracket(L),(R).

① Then align the guide holes(D) of Top Plate with Bosses of side Bracket(L),(R).

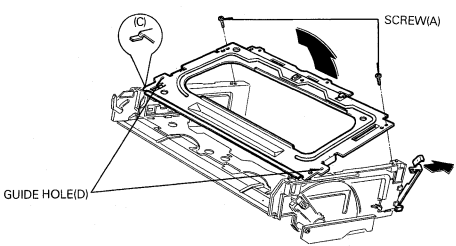


Fig. A-3 Top Plate

4. Carrier Bracket Assembly

4-1. Carrier Bracket Assembly(Fig. A-4-1)

1) Remove the Carrier Bracket Assembly by moving it in the direction of arrow(C).

*** NOTE**

1) When reassembling, be sure that parts(A) of Carrier Bracket Assembly are seated in parts(B) of Bracket(L),(R).

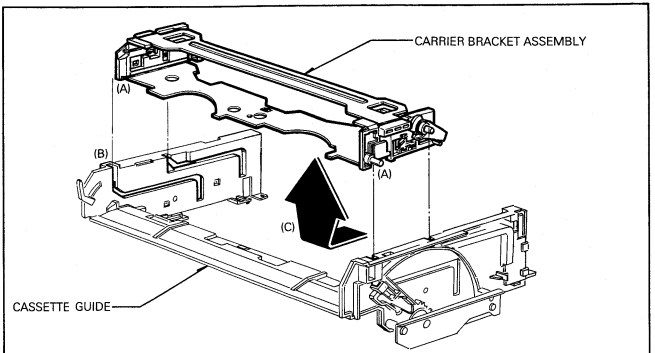


Fig. A-4-1 Carrier Bracket Assembly

4-2. Cassette Opener(Fig. A-4-2)

1) Release the spring O.C from the Hook(A) and then release it from Hook(C) of cassette opener.
2) Remove the cassette opener by releasing the Hook(B) from the Holder(R).

4-3. Lid Opener(Fig. A-4-2)

1) Remove the lid opener by pushing it outward.

*** NOTE**

1) When reassembling, seat the upper part of the lid opener in the grooved of Holder(R) and push it inward.

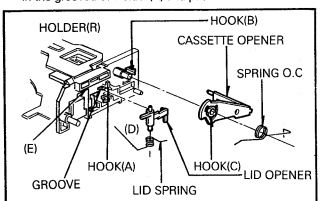


Fig. A-4-2. Cassette Door Opener/Lid Opener

4-4. Detect Lever and Detect Spring

1) Remove the spring detect.
2) Lower the side(A) of Detect Lever and then remove the Detect Lever by pushing it outward.

*** NOTE**

1) When reassembling, make sure that the part(C) of Detect Lever set in the part(B) of Holder(R).

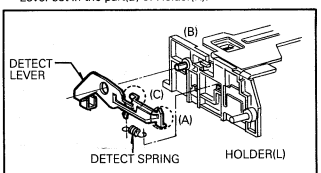


Fig. A-4-3 Detect Lever, Detect Spring

4-5. Bracket Support (Fig. A-4-4)

1) Take the Support Bracket out by releasing hooks(A),(B).

*** NOTE**

1) When disassembling and reassembling, be careful because heavy force can damage the hooks.

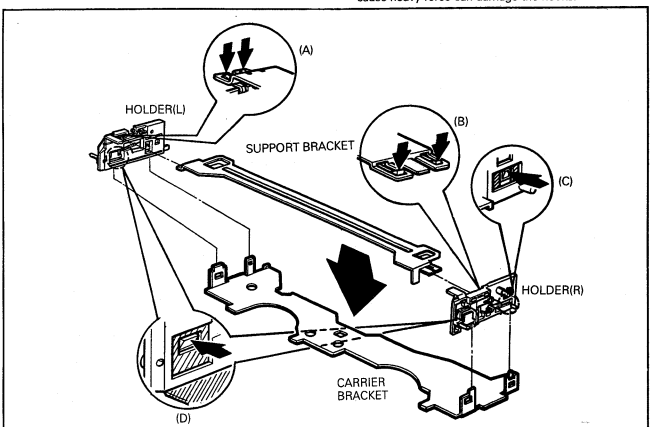


Fig. A-4-4 Bracket Support/Bracket Carrier

4-6. Carrier Bracket Assembly(Fig. A-4-4)

1) Remove the Carrier Bracket by releasing hooks(C),(D).

5. Cassette Guide(Fig. A-5)

1) Remove the Switch Spring with the Front Loading Mechanism Assembly turned over.
2) Push two hooks(B) outward.
3) Remove the Cassette Guide by pushing two hooks(A). outward(if one is removed, the other will be easy to remove)

*** NOTE**

1) When reassembling

① Seat projections(E) of Cassette Guide in holes of Bracket Assembly(L),(R) and then engage the Hook(A).

② After finishing previous step, fix the Cassette Guide to the Bracket Assembly(L),(R) by pushing two hooks(B) inward.

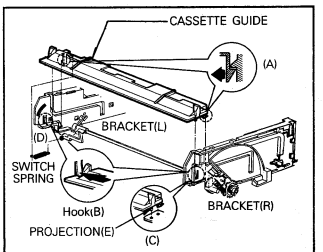


Fig. A-5 Cassette Guide

6. Bracket Assembly Side (Fig. A-6-1)

1) Remove two screws(A) and then remove the Side Bracket Assembly and the Rack Gear N.D.

*** NOTE**

1) When reassembling
① Turn the Drive Gear Assembly in the direction of arrow (C).
② Reassemble the Rack Gear N.D. to the Side Bracket Assembly, as shown in Fig. A-6-2, and then reassemble it to the Bracket Assembly(L), This time the Assembling Figure should be the same as(B) at the rectangular hole of Bracket Side.

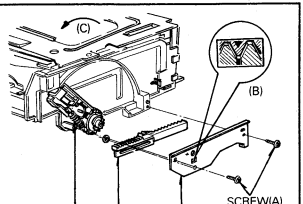


Fig. A-6-1 Side Bracket Assembly

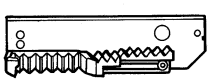


Fig. A-6-2

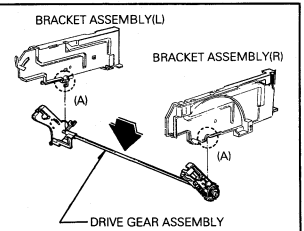


Fig. A-7 Bracket Assembly(L),(R)

7. Bracket Assembly(L),(R)(Fig. A-7)

1) Seperate the Bracket Assembly(L),(R) from the Gear Assembly Drive.

*** NOTE**

1) When reassembling, seat the shaft in the part(A) of Bracket Assembly(L),(R).

8. Door Opener(Fig. A-8)

1) Remove the Door Opener by pushing Hook(A) outward.

*** NOTE**

1) When reassembling, seat the part(B) of Door Opener in the hole( ) of Bracket(L).

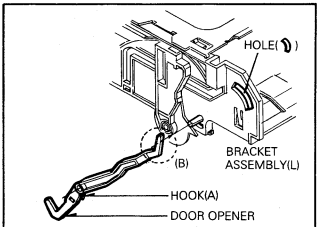


Fig. A-8 Door Opener

9. Drive Gear Assembly

9-1. Drive Gear Assembly(Fig. A-9-1)

1) Remove the Drive Gear Assembly from the Bracket Assembly(L),(R).

9-2. Cushion Spring(Fig. A-9-1)

1) Remove the cushion spring from the Gear R .

9-3. Cap-D(Fig. A-9-1)

1) Remove the Cap-D by lifting it up.

9-4. Spring C.C(Fig. A-9-1)

1) Remove the Spring C.C from the Gear R.

9-5. Gear C(Fig. A-9-1)

1) Remove the Gear C by lifting up when the projection of Gear C is aligned with the hole of Gear R while rotating the Gear C in the counterclockwise direction.

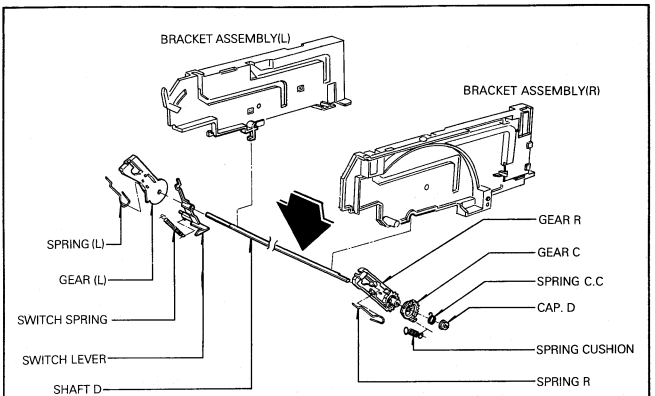


Fig. A-9-1 Gear Assembly Drive

*** NOTE**

1) When reassembling, seat the projections of Gear R in the holes of Gear C when the projection of Gear R is aligned with the hole of Gear C, and then keep the Gear C turned in the clockwise direction.

9-6. Gear R(Fig. A-9-1)

1) Lift up the Gear R from the Shaft.

9-7. Spring R(Fig. A-9-2)

1) Remove the Spring R by releasing Hooks.

*** NOTE**

1) When reassembling, be certain Spring R in the part(A) of Gear R.

9-8. Gear L.(Fig. A-9-1)

1) Remove the Gear L from the shaft.

9-9. Spring L (Fig. A-9-2)

1) Remove the Spring L by releasing Hooks from the Gear L.

*** NOTE:** (Refer to the Spring R Section)

9-10. Switch Lever(Fig. A-9-1)

1) Remove the Switch Lever from the shaft.

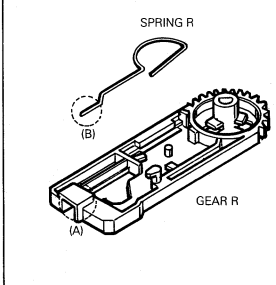
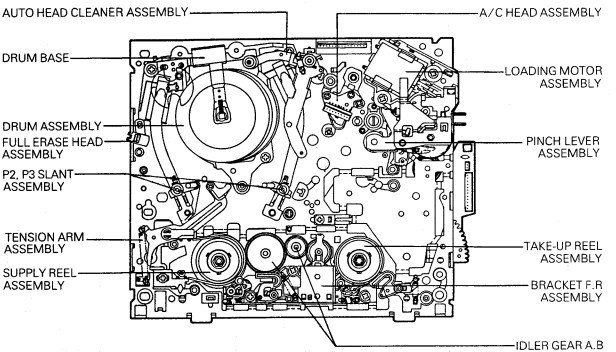


Fig. A-9-2 Spring R

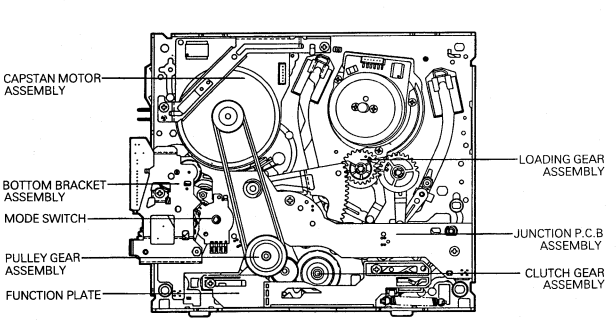
DECK MECHANISM DISASSEMBLY

• Deck Mechanism Parts Location

Top Side



Bottom Side



1. Auto Head Cleaner Assembly (Fig. B-1) (Optional Item)

1) Remove the Cleaner Arm Assembly (Auto Head Cleaner Assembly) by pushing the Locking Tab.(B) outward.
2) Remove the Cleaner Upper Spring and then remove the Cleaner Upper Arm Sub Assembly.
3) Remove the Cleaner Spring.

*** NOTE**

1) When reassembling, do not touch the Video Head Tip with fingers or tools.

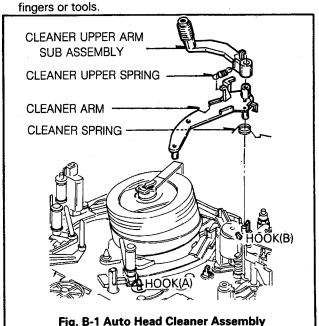


Fig. B-1 Auto Head Cleaner Assembly

2. Drum Assembly and Drum Base(Fig. B-2)

1) Remove the Auto Head Cleaner Assembly.
2) Unplug the connector with the Deck Mechanism Assembly turned over.
3) Loosen the screw(A) and then lift up the Drum Brush.
4) Remove two screws(B) and then lift up the Drum Assembly and Drum Base from the Deck Mechanism Assembly.
5) Separate the Drum Assembly from the Drum Base by Loosening three screws(C) on the back of Drum Base.

*** NOTE**

1) When disassembling and reassembling
① Do not touch the Video Head tip with fingers or tools. (Give special attention to disassembling and reassembling of Auto Head Cleaner Assembly)
② After reinstalling the Drum Brush, the Drum Brush should be aligned with the center of vertical axis of Drum Assembly.
③ After completing the reassembly, adjust the transportation system and the Servo P.G.

3. Upper and Lower Drum Assembly (Fig. B-3)

1) Remove the Drum Assembly and Drum Base from the Deck Mechanism Assembly.
2) Separate the Drum Assembly from the Drum Base.
3) Remove two screws(A).
4) Remove the P.C.B.
5) Separate the upper Drum Assembly from the Lower Drum Assembly.

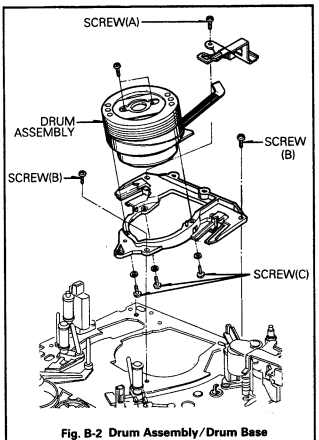


Fig. B-2 Drum Assembly/Drum Base

*** NOTE**

1) When disassembling and reassembling
① Do not touch the Video Head Tip with fingers or tools.
② Make sure that the color(white) marked on the P.C.B of the upper Drum should coincide with the color(Green) marked on the Flange Assembly.

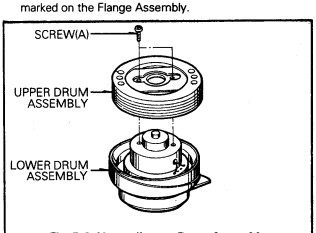


Fig. B-3 Upper/Lower Drum Assembly

4. A/C(Audio/Control) Head Assembly (Fig.B-4)

1) Unplug the connector
2) Remove the Nut(A), and then lift up the A/C Head Assembly.
3) Remove the Azimuth Adjusting Screw.
4) Remove two screws(B),(D) and then separate the A/C Head Assembly from the Base A/C Head Assembly.

*** NOTE**

1) When disassembling
① First of all, release the spring A/C.
② Do not touch the A/C Head Tip with fingers or tools.
③ After reinstalling the Audio Control Head Assembly, adjust the Tilt, Azimuth and Height of A/C Head.

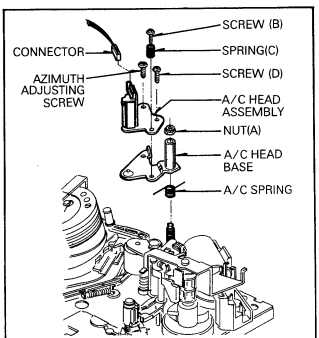


Fig. B-4 A/C Head Assembly

5. Pinch Lever Assembly(Fig. B-5)

1) Remove one Nut, and then remove the Dew Bracket.
2) Lift up Pinch Lever Assembly.
3) Remove the Pinch Spring, and remove the Pinch Lever.
4) Remove the Stopper Spring and remove the Pinch Stopper by lifting it up when the Hook of Pinch Stopper is aligned with the hole of Pinch Arm while rotating the Pinch Stopper in the counterclockwise direction.
5) Remove the Pinch Cap, and then remove the Pinch Roller Assembly.

*** NOTE**

1) When disassembling and reassembling
① Be careful not to get any foreign substance on the Roller.
② When disassembling the Pinch Cap, be careful not to damage the Pinch Arm.

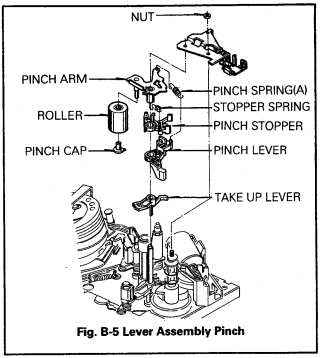


Fig. B-5 Lever Assembly Pinch

6. Loading Motor Assembly(Fig. B-6-1, B-6-2)

1) Remove the Dew Bracket.
2) Unplug the connector from the Junction P.C.B Assembly
3) Remove two screws(A).
4) Remove the worm wheel by pushing it down.
5) Remove the Loading Motor Assembly by pushing(C) and (D) outward.
6) Remove the worm Gear Assembly from the Loading Motor Assembly by pushing it.

*** NOTE**

1) When reassembling
① Make sure that the worm assembly is seated in the axis of Loading Motor.
② Two grooves(G) of Loading Motor should be turned up and two projections(F) of Bracket Assembly should be seated in each at the two holes(E)(Fig. B-6-1).
③ Take notice of the polarity of the Loading Motor.

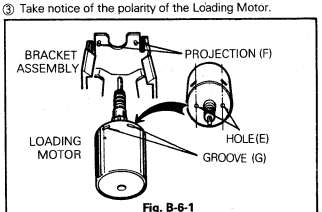


Fig. B-6-1

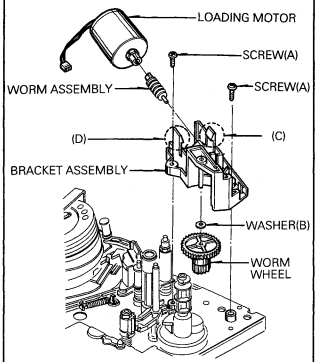


Fig. B-6-2 Loading Motor Assembly

7. Take Up Lever(Fig. B-7)

1) Remove the Dew Bracket.
2) Remove the Pinch Lever Assembly.
3) Remove the Take-Up Lever by pushing the hook(A) outward.

*** NOTE**

1) When disassembling and reassembling
① When disassembling the Take-Up Lever, be careful not to break the Hook(A).
② When reassemble the Take-Up Lever,align the appendant Gear of Lever Take-Up with the appendant Gear of Take-up Arm
③ Reassemble the Take-Up Lever completely by hooking (A).

8. Take Up Arm Assembly(Fig. B-8)

1) Remove the Dew Bracket, Pinch Gear, and the Take-Up Lever
2) Remove one Nut(A).
3) Remove the Take-Up Arm Assembly by lifting it up.
4) Remove the spring(B).

*** NOTE**

1) When reassembling
① Align the Gear of Take-Up Arm with the Gear of Take-Up Lever.

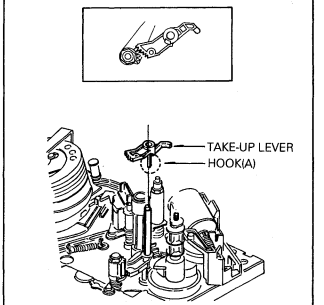


Fig. B-7. Take-Up Lever

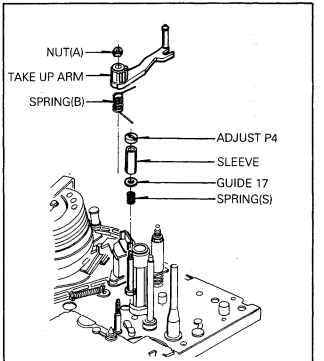


Fig. B-8 Take-Up Arm Assembly/P4

9. P4 Assembly(Fig. B-8)

1) Remove the Adjust P4.
2) Remove the Sleeve.
3) Remove the Guide 17.
4) Remove the Spring

10. Pinch Gear

1) Remove one Nut(A) and then remove the Dew Bracket.
2) Remove the Pinch Lever Assembly by lifting it up.
3) Remove the Loading Motor Assembly.
4) Remove the Take Up Lever.
5) Remove the Pinch Gear Assembly.

• NOTE

1) When reassembling, align the hole(A) of Pinch Gear with the hole of chassis, and the hole(C) of Pinch Gear with the groove(D) of the P.C.Gear. Hole(E) of chassis should be aligned with the hole of P.C.Gear.

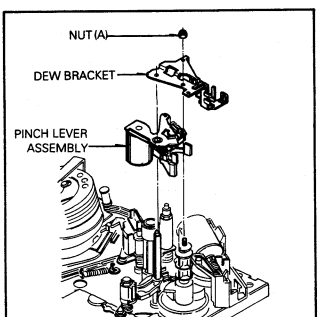


Fig. B-10-1 Pinch Gear Assembly

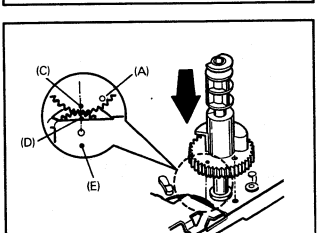


Fig. B-10-2 Pinch Gear

11. FE(Full Erase) Head Assembly(Fig. B-11) (Optional Item)

1) Unplug the connector.
2) Remove one screw(A), and then remove the FE Head.

• NOTE

1) When disassembling and reassembling
① Do not touch the Video Head Tip with fingers or tools.

12. P1 Assembly(Fig. B-11)

1) Remove the Stopper P1.
2) Remove the Roller P1 .
3) Remove the Sleeve P1.
4) Remove the Guide 17.

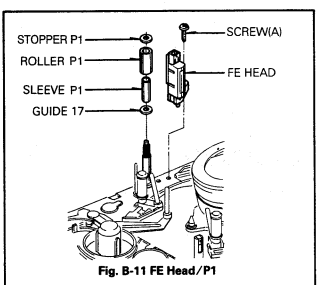


Fig. B-11 FE Head/P1

13. Tension Arm Assembly(Fig. B-13)

1) Remove one screw(C).
2) Remove the Tension Spring.
3) Remove the Tension Arm Assembly by pushing hooks outward with the Deck Mechanism Assembly turned over.
4) Remove the Tension Band Assembly from the Tension Arm by pushing Hooks of Holder(A).

• NOTE

1) When disasembling and reassembling, give special attention to the disassembling and reassembling of Tension Arm Assembly, because the Tension Band is interposed between the Supply Reel and the Soft Brake.

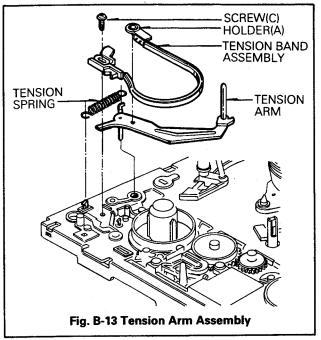


Fig. B-13 Tension Arm Assembly

14. Supply Soft/Supply Main/Take-Up Soft/Take-Up Main Brake Assembly

1) Supply Soft Brake(SSB)
   ① Remove the SSB Spring.
   ② Remove the SSB.
2) Supply Main Brake(SMB)
   ① Remove the SMB Spring.
   ② Remove the SMB.
3) Take Up Soft Brake(TSB)
   ① Remove the TSB Spring.
   ② Remove the TSB.
4) Take-Up Main Brake(TMB)
   ① Remove the TMB Spring.
   ② Remove the TMB.

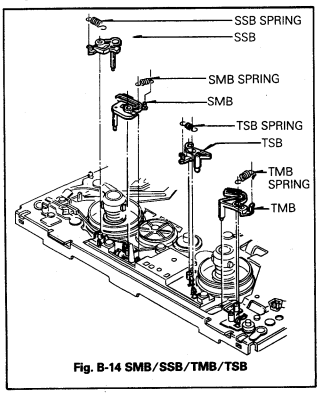


Fig. B-14 SMB/SSB/TMB/TSB

15. Bracket F/R(FF/Rewind) Assembly (Fig. B-15)

1) Remove the TMB.
2) Remove the Washer(A), and then remove the Gear F.R.
3) Remove three screws, and then remove Bracket F/R Assembly from the Deck Mechanism Assembly.
4) Remove the Washer(B), and spring Up/D, and then remove the Gear Up/D.
5) Remove the shaft(C), and then remove the Arm F.R, Lever F.R and Spring F.R.

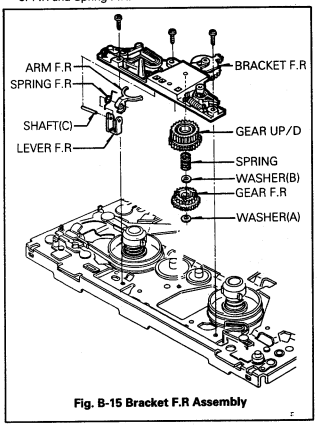


Fig. B-15 Bracket F.R Assembly

16. Supply Reel Assembly(Fig. B-16)

1) Remove the Tension Band Assembly.
2) Remove the Bracket F/R.
3) Lift up the Supply Reel Assembly from the Deck Mechanism Assembly.
4) Separate the Reel Cap from the Supply Reel by taking it out of Hooks(A).

17. Take Up Reel Assembly(Fig. B-16)

1) Remove the TMB(Fig. B-14)
2) Lift up the Take-up Reel Assembly from the Deck Mechanism Assembly.
3) Separate the Reel Cap and Spring from the Take-Up Reel by releasing Hooks(S).

*** NOTE**

1) When reassembling
① Make sure that the Supply and Take Up Reel are not exchanged.
② After reinstalling the Supply Reel Assembly, Adjust the Tension.

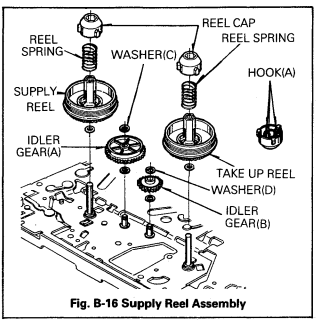


Fig. B-16 Supply Reel Assembly

18. Idler Gear(A), (B)(Fig. B-16)

1) After removing the Supply Reel, and supply Main Brake Assembly, remove the washer(C) and remove the Idler Gear(A).
2) Remove the Washer(D) and remove the Idler Gear(B).

19. Pulley Gear Assembly (Fig. B-19)

1) Turn over the Deck Mechanism Assembly.
2) Remove the Capstan Belt.
3) Remove the Washer(A) and lift up the Pulley Gear.

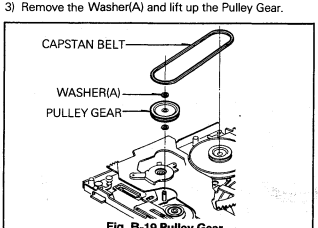


Fig. B-19 Pulley Gear

20. Bracket Bottom Assembly (Fig. B-20)

1) Remove one screw(A).
2) Remove one Hexagonal Nut, and then lift up the Bracket Bottom Assembly.
3) Remove one Washer, and lift up the Ratchet Gear 1.

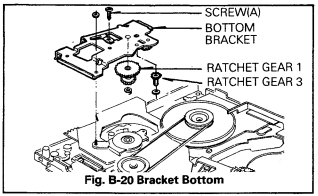


Fig. B-20 Bracket Bottom

4) Remove the washer, and then remove Ratchet Gear 3 from the Bottom Bracket.

21. Junction PCB(Printed Circuit Board) Assembly (Fig. B-21-1)

1) Remove the Bottom Bracket Assembly.
2) Remove two screws(A),(B) and then remove the Junction P.C.B Assembly.
3) Remove the Mode Switch from the Junction P.C.B Assembly.
4) Remove the Reel Sensors, Sensor LEDS and each holder from the Junction P.C.B(Fig. B-21-2).

*** NOTE**

1) When reassembling the Mode Switch, the groove(V) and (U) of Mode Switch should be at their original place in the Eject Mode.

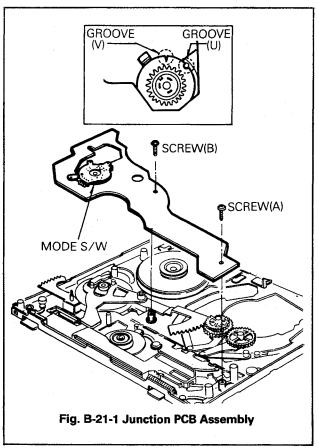


Fig. B-21-1 Junction PCB Assembly

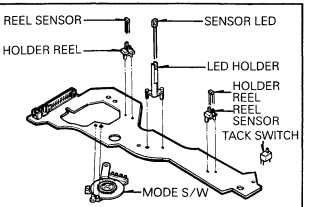


Fig. B-21-2 Mode S/W/Reel Sensor/Sensor Led

22. Capstan Motor and Brake Assembly (Fig. B-22-1)

1) Remove the Junction P.C.B Assembly
2) Hook the end of Capstan Brake Spring to the projection of Capstan Brake and then remove the Capstan Brake Assembly by lifting it up(Fig. B-22-2).
3) Remove two Screws(A), and then remove the Bracket C-Guide.
4) Remove the Connector.
5) Remove three screws(B), and then remove the Capstan Motor Assembly from the Deck Mechanism Assembly.

*** NOTE**

1) When disassembling and reassembling, hook end of the spring on the projection of Cap-Brake and remove it by lifting it up. Reassemble it in the opposite manner.

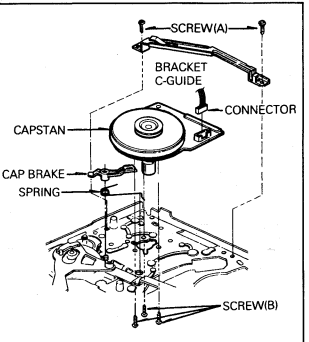
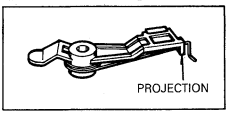


Fig. B-22-1 Capstan Motor Assembly

A:BEFORE
REASSEMBLING OR AFTER DISASSEMBLING



B:AFTER
REASSEMBLING OR BEFORE DISASSEMBLING

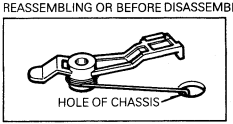


Fig. B-22-2 CAP Brake Assembly

23. Function Plate(Fig. B-23)

1) Remove two screws(B) in Eject Mode.
2) Remove the Function Plate Spring.
3) Remove the Function Plate.

*** NOTE**

1) When reassembling,the groove of Lower part of Function Plate should be aligned with the shaft of Tension Lever Assembly (Fig. B-29).

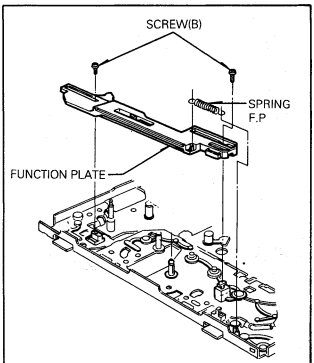


Fig. B-23 Function Plate

24. Ratchet Lever Assembly(Fig. B-24)

1) Remove the Function Plate.
2) Remove the Junction P.C.B Assembly.
3) Remove the Washer(A) and then remove the Ratchet Lever Assembly.
4) Remove the Ratchet Spring.
5) Remove the Ratchet Lever from the Ratchet 17 by lifting it up when the hook of it is aligned with the hole of Ratchet 17 while rotating it counterclockwise direction.
6) Remove the Washer(B), and turn over the Ratchet 17 and then remove the Slant Pin, Spring F, Lever.

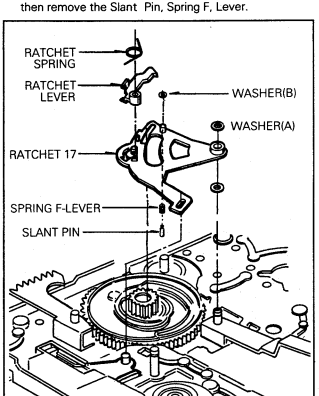


Fig. B-24 Ratchet Lever Assembly

25. Cam Gear/Rack Gear T/Rack Gear FL(Fig. B-25-2)

1) Remove the washer(A) and remove the Ratchet Lever Assembly.(Fig. B-25-1).
2) Remove the washer(B), and then remove the Cam Gear (Fig. B-25-2).
3) Remove the Rack Gear F.L.(Fig. B-25-3).
4) Remove the Rack Gear T.(Fig. B-25-3).

*** NOTE**

1) When reassembling
① Align the Projection of Rack Gear T with the hole of Loading Gear.
② Drive the Rack Gear F.L in the direction of arrow(D).
③ Hole of Cam should be aligned with the hole of chassis, and the groove(■) of Cam Gear should be aligned with the hole of PC Gear (Fig. B-26).

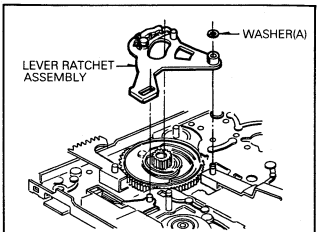


Fig. B-25-1 Lever Ratchet Assembly

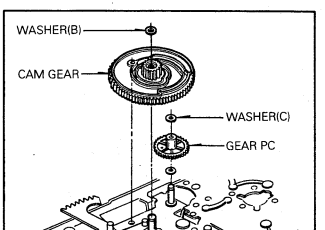


Fig. B-25-2 CAM/PC Gear

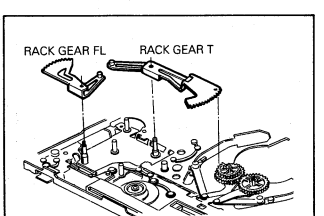


Fig. B-25-3 Rack Gear F.L/Rack Gear T

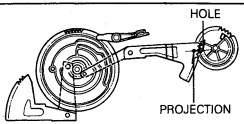


Fig. B-25-4 Rack Gear F.L/Rack Gear T/CAM Gear

26. PC Gear(Fig. B-26)

1) Remove the washer(C).
2) Remove the P.C Gear by lifting it up.

*** NOTE**

1) When reassembling

① The Groove of PC Gear should be aligned with the groove(V) of Cam Gear, and another hole of it should be aligned with the hole of chassis (Fig. B-26).

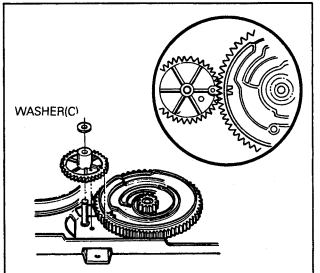


Fig. B-26 PC Gear

27. P2 and P3 Slant Assembly (Fig. B-27)

1) After finishing the disassembly of Drum Assembly, remove the P2 and P3 Slant Assembly by turning the Loading Gear(R) in the clockwise direction.(Loading direction)
2) Loosen the set screws.
3) Remove the Roller Guide from the Slant Base.

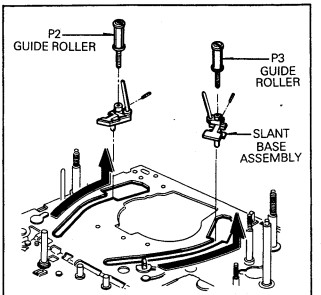


Fig. B-27 Slant Assembly

*** NOTE**

1) When disassembling and reassembling

① Use a Hexagonal wrehch to remove set screw.
② Take notice that the P2 and P3 Slant Assembly should not be changed from their original place.

28. Loading Gear Assembly(L),(R) (Fig. B-28)

1) Remove the Cam Gear, Rack-T.
2) Remove the P2 and P3 Slant Assembly by turning the Loading Gear(L),(R) in the Loading direction
3) Lift up the Loading Gear Assembly(L),(R) from the Deck Mechanism Assembly.
4) Remove the Spring Load(L),(R).
5) Separate the Loading Gear(L), (R) from Lever Load(L),(R).

*** NOTE**

1) When reassembling

① Make sure that the Loading Gear(L) and (R) should not be changed from their original place.
② Align the groove of Loading Gear(L),(O) with the groove of Gear(R),(O).

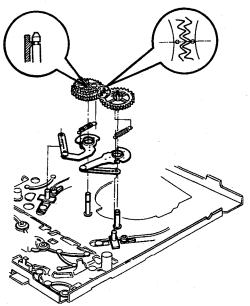


Fig. B-28 Loading Gear Assembly

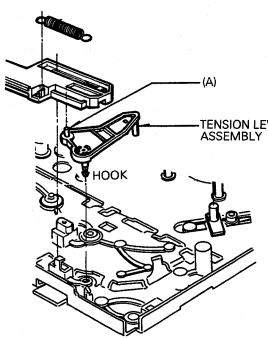


Fig. B-29 Tension Lever Assembly

29. Tension Lever Assembly (Fig. B-29)

1) Remove the Function Plate.
2) Remove the Tension Lever Assembly by pushing hooks inward.

*** NOTE**

1) When reassembling

① Set the part(A) of Tension Lever Assembly in the groove of Lower part of Function Plate.

② After reinstalling the Tension Lever Assembly, adjust the Tension Post and the Tension with a Tension Cassette.

30. Clutch Gear Assembly (Fig. B-30)

1) Remove the Pulley Gear.
2) Remove the Plate Function.
3) Remove the washer(A), and then remove the Clutch Gear Assembly.

*** NOTE**

1) When reassembling

① Do not disassemble the Clutch Gear Assembly any further, because Torque adjustment is not adjustible.

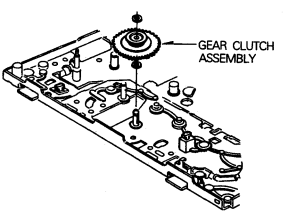
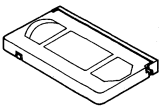
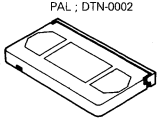
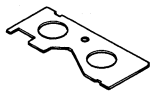
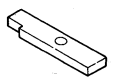


Fig. B-30 Gear Clutch Assembly

MECHANISM ADJUSTMENTS

• Tools and Fixtures for Deck

1. Back tension meter Parts No ; D00-D006 	2. NTSC alignment tape Parts No NTSC ; DTN-0001 PAL ; DTN-0002 	3. Master plane Parts No ; RJ10028 
4. Torque gauge Parts No ; D00-D002 	5. Torque gauge adaptor Parts No ; D09-R001 	6. Reel table height fixture Parts No ; RJ10027 
7. Post height adjusting driver Parts No ; DTL-0005 	8. M3 Nut driver Parts No ; DTL-0006 	

1. Mechanism State Switch (Mode Switch) Check

Purpose: To detect accurately the mechanism state and prevent the mechanism from malfunction.

Test Equipment/Fixture	VCR State	Check Point
● Blank tape	● Eject Mode (with cassette ejected)	● Mechanism state switch (Mode Switch and Cam)

Check Procedure

1) Turn the VCR on and eject the tape by pressing eject button.
2) Remove the Cabinet Top, the Main P.C.Board and the CST Housing. Then push the CST IN/OUT switch (Loca. #137) and eject button at the same time.
3) Turn the worm (Loca. #082) of Loading Motor Assembly (Loca. #A10) to the left side (counter-clockwise) to align the three holes (A) of the Pinch Gear, the P.C.Gear and the Chassis.
4) Remove the Bottom Cover and then check that the groove (V) and the hole (O) of Mode S/W are aligned each other. If the above alignment is not obtained, adjust as follows.
   (1) Remove the Bracket Assembly Bottom and the Capstan Belt in the state of power off.
   (2) Remove the P.C.B Assembly, align the groove (V) and the hole (O) of Mode S/W each other and then reassemble the P.C.B Assembly.
   (3) Turn the power on and perform the various operations to check that the loading and the unloading are correct.

Check Diagram

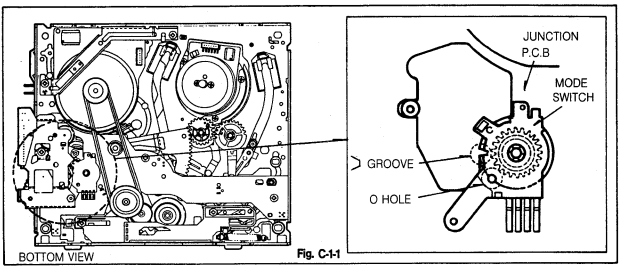


Fig. C-1-1

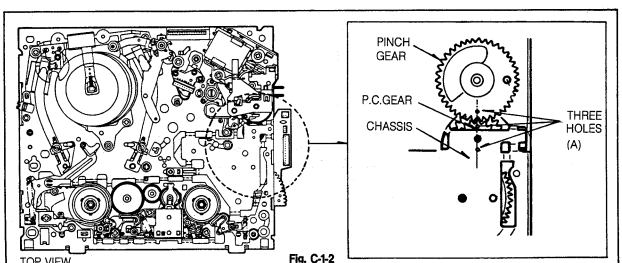


Fig. C-1-2

2. Preparation for Adjustment(To set VCR to the loading state without inserting a cassette)

1) Unplug the power cord from the AC outlet.
2) Remove the Cabinet Top and Front Loading mechanism.
3) Plug the power cord into the AC outlet.
4) Turn the VCR on and push the tact switch in the PCB Assembly.
   The VCR can accept input of each mode in this case. However the rewind and review operation cannot be performed for more than a few seconds because the take-up reel table is in the stop state and reel pulses cannot be detected.

(NOTE)
Always return the VCR to the Front Loading Mechanism Assembling State in the following order after the above operations have been performed.
1) Press the Eject button after turning the power on.
2) Wait for about 10 seconds until searching out the assembly position.
3) Assemble the Front Loading Mechanism and connect the Front Loading Mechanism Connector.
4) Refer to the "Front Loading Mechanism Disassembly" which is described previously.

3. Reel Table Height Adjustment

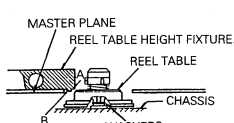
Purpose: To set the reels of the cassette to the specified height, thus determine the height of tape.

Test Equipment/Fixture	Preparation for adjustment	VCR State	Adjustment Points
● Master Plane ● Reel Table Height Fixture	1) Remove the Front Loading Mechanism 2) Mount the Master Plane and place the Reel Table Height Fixture on it.		● Washer under the Supply and Take-Up Reel Tables.

Adjustment procedure
1) Check that the Reel Table is between sections A and B of the Reel Table Height Fixture.
2) If the table is not between sections A and B of the Fixture, replace the washers(two types, 0.3mm and 0.5mm thick) in the Reel Table or adjust them.

****CAUTION****
When the Tension Arm and Tension Band are removed, adjust the tension post position and tension after reinstalling them.

Adjustment Diagram



SUPPLY AND TAKE-UP REEL TABLE

Fig. C-3

4. Tension Post Position and Tension Adjustment

Purpose: To make the tension of tape constant so that the contact between the video heads and tape is stabilized.

Test Equipment/Fixture	VCR State	Adjustment Point
● Tension Meter (Tension adjustment)	● Play without cassette and with a Tension Meter	● Holder Band(A)

Adjustment Procedures

〈Position Adjustment〉

1) Perform loading without inserting a tape and loosen the screw that attaches the Band Holder(B) to the D-Deck Mechanism Assembly.
2) Insert the (—)type driver between the Band Holder(B) and the "V" groove of the chassis.
3) Move the Band Holder(B) right and left and align the center of tension post with the center of P1.
4) Tighten the screw that attachs the Band Holder(B) to Deck Mechanism Assembly.

〈Tension Adjustment〉

1) Play the Tension Meter and read the Tension Meter:35g·cm±2.5g·cm(reference value).
2) If the result is abnormal.
   (1) over the standard:loosen the screw, move the Band Holder(B) right a little and then tighten the screw and make sure that this adjustment is correct.
   (2) below the standard:loosen the screw, move the Band Holder(B) left a little and then tighten the screw and make sure that this adjustment is correct.

****CAUTION****

The range of movement of Band Holder(B) should be within ±1.5mm while being adjusted.
If the range is over, you should recheck the Reel Brake, Tension Arm and Spring.

Adjustment Diagram

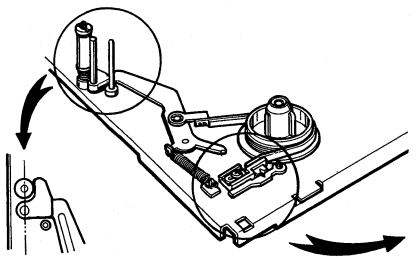


Fig. C-4-1

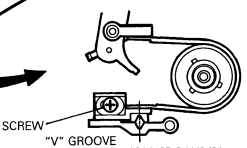


Fig. C-4-2

5. Checking Torque

Purpose: It is necessary to check the tension, torque and compression force at the tape take-up section and moving section to make the tape run smoothly and satisfy the basic performance of the VCR. Check these if the tape does not run smoothly or the tape speed is abnormal.

Test Equipment/Fixture	VCR state
● Torque Gauge ● Torque Gauge Adaptor	● Set the VCR to each operation mode without inserting a cassette. (See '2 Preparation for Adjustment')

Item	VCR Operation mode	Measurement Reel	Measurement Values
Main brake torque.	Eject	Supply and take-up reels	600g.cm or more
Slack removal torque	Unloading(power off)	Supply reel	110~200g·cm
Fast forward torque	Fast forward	Take-up reel	400g·cm or more
Rewind torque	Rewind	Supply reel	400g·cm or more
Play take-up torque	Play	Take-Up reel	90~130g·cm

Checking Method

The values are measured by using a torque gauge and torque gauge adaptor with the torque gauge fixed.

Note: This value is measured when the VCR is shifted in the unloading direction from the fast forward or rewind mode and quick braking is applied to both Reel Tables.

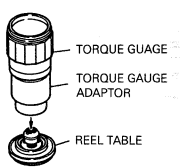


Fig. C-5

6. Guide Post Height Adjustment

Purpose: To control tape height

Test Equipment/Fixture	VCR State	Adjustment Point
● Master Plane ● Blank Tape ● Reel Table Height Jig ● Post Height Adjusting Driver ● M3 Nut Driver	● Mount the Master Plane and place the Reel Table Height Jig on it.	● Nuts on Impedance Roller ● Guide Post

1) Set the clearance between the bottom of the P1 Roller Flange and under cut of Reel Table Height Fixture to 0~0.1mm(Fig. C-6-1).
2) Set the clearance between the bottom of the Guide Post upper flange and top of the Reel Table Height Jig to 0~0.2mm(Fig. C-6-2).
3) Load and run the Tape and check that the tape does not ride over the upper and lower flanges of the guide post.
4) If the tape rides over either flange, adjust the height of P1 Roller and Guide Post as follows(Fig. C-6-3).
   - If the tape rides over the upper flange, turn the nut counterclockwise.
   - If the tape rides over the lower flange, turn the nut clockwise.

Adjustment Diagrams

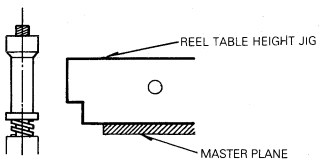


Fig. C-6-1

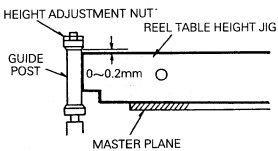


Fig. C-6-2

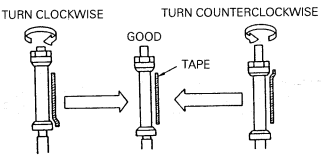


Fig. C-6-3

7. Guide Roller Height Adjustment

Purpose: To regulate the height of tape so that the bottom of tape runs along the tape guide line on the lower drum.

A. Coarse Adjustment

Test Equipment/Fixture	VCR State	Adjustment Point
● Master Plane ● Reel Table Height Fixture ● Hexagonal Wrench ● Post Height Adjusting Driver	● Mount the Master Plane and place the Reel Table Height Fixture on it.	● Roller Guide Height Adjustment Screws on the Supply and Take-Up Guide Rollers.

Adjustment Procedure

1) Align the bottom of the Guide Roller's upper flange and the top of the Reel Table Height Fixture.
2) Perform the precise adjustment next.
3) When the Guide Roller is damaged, release the Guide Roller retaining screw and then replace the Guide Roller.

Adjustment Diagram

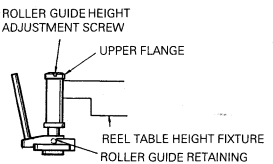


Fig. C-7-1

B. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	VCR State	Adjustment Point
● Oscilloscope ● Post Height Adjusting Driver ● Alignment Tape ● Hexagonal wrench	● CH-1:PB RF Envelope ● CH-2:SW 3–Hz ● Head Switching Output Point ● RF Envelope Output Point	● Play an alignment tape	● Guide Roller Height Adjustment Screws.

Adjustment Procedure

1) Play an alignment tape after connecting the probe of the oscilloscope to RF Envelope Output Test Point and Head Switching Output Test Point.
2) Tracking control(in PB mode):Center position(When this adjustment is performed after the drum assembly has been replaced, set the tracking control so that the RF output is maximum.)
3) Height adjustment screw:Flatten the RF waveform.
4) Turn(Move) the tracking control(playback) clockwise and counterclockwise.(to the right and left)
5) Check that the drops of RF output are uniform at the start and end.

Waveform Diagrams

Trun the Roller Guide Height Adjustment Screw slightly to flatten the waveform.

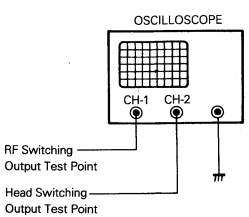
Fig. C-7-2

Tracking control at center

Turn(Move) the tracking control to both directions.

Fig. C-7-3

Connection Diagram



8. Audio/Control(A/C) Head Adjustment

Purpose: To keep the contact between the tape and head so that the specificed track is recorded and played back.

A. Coarse Adjustment

Test Equipment/Fixture	VCR State	Adjustment Points
● Master Plane ● Reel Table Height Fixture ● M3 Nut Driver	● Mount the Mater Plane and place the Reel Table Height Fixture on it.	● Special screw ● Cone Point Screw for tilt ● Azimuth Adjustment Screw ● A/C Head Adjuster
● Blank tape	● Run the blank tape	

Adjustment procedure/Adjustment Diagram

1) Tighten the spring section of the special screw so that it protrudes 6.4mm(approx.) over the top of Head Base(1).

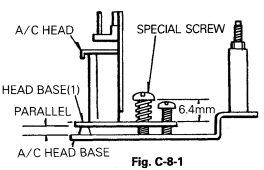


Fig. C-8-1

2) Turn the Azimuth Adjustment Screw and Cone Point Screw so that the Head Base(1) and A/C Head Base are parallel.

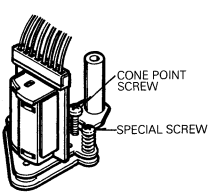


Fig. C-8-2

3) Turn the A/C Head Adjuster until the clearance between the Master Plane and Head Base(1) is approx 1.2mm.

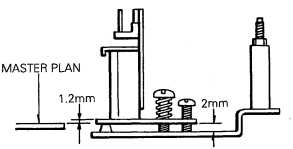


Fig. C-8-3

4) Remove the adjustment fixture, load a blank tape and set the VCR to the play mode.

5) Check that there is no conspicuous curling and riding over around the A/C head. If there is conspicuous curling or riding over, readjust the Cone Point Screw, Azimuth Adjustment Screw and A/C Head Adjuster. When the bottom edge of tape is 0.20~0.25mm from the bottom edge of the control head's core, the height of A/C head is ideal.

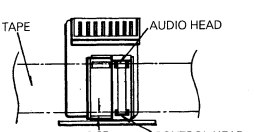


Fig. C-8-4

6) Perform the precise adjustment continuously.

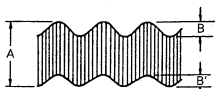
B. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Point	VCR State	Adjustment Points
● Oscilloscope ● Alignment tapes ● M3 Nut Driver	● Audio output jack	● Play an alignment tape 1KHz, 7KHz sections	● Azimuth Adjustment Screw ● A/C Head adjuster ● Cone point screw

Adjustment Procedure

1) Connect the probe of oscilloscope to audio output jack.
2) Adjust the Azimuth Adjustment Screw, A/C Head adjuster and cone point screw slightly and alternately so that a Audio 1KHz output is maximum and flat.(minimum fluction)
3) Adjust the Azimuth Adjustment Screw slightly and alternately so that the Audio 7KHz output is maximum.

Waveform Diagram



A:Maximum BB':Minimum

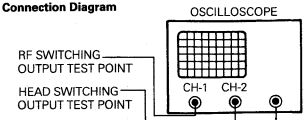
Fig. C-8-5

9. X-Value Adjustment

Purpose: To obtain compatibility with other VCRs.

Test Equipment/Jigs	Test Equipment Connection Points	VCR State	Adjustment Points
● Oscilloscope ● Alignment tapes ● Post Height Adjusting Driver	● CH-1:PB RF Envelope ● CH-2:SW 30Hz ● Head Switching Output Test Point ● RF Envelope Output Test Point	● Play an alignment tape	● X Adjust

Connection Diagram



1) Insert a cassette tape, and then "AUTO TRACKING" will be displayed on the Digitron, then push the Tracking ⊕ or ⊖ Keys one time as soon as possible to make the VCR release the Auto Tracking.
2) Turn the Adjust X to the maximum RF Envelope level when the VCR is free from the Auto tracking.
3) If RF envelope output is maximized from the center click position in right direction(clockwise), set the tracking control to the center and turn the X Adjust counterclockwise.
4) If in left direction(counterclockwise), turn it clockwise by same method.
5) In case of the 30 μ m, head will trace over a 60 μ m width track, readjust it so that RF Envelope output begins falling at the same angle when tracking control is turned either left or right.

Adjustment Procedure

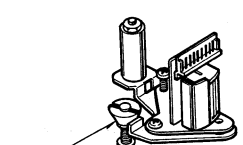


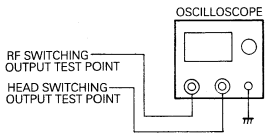
Fig. C-9

10. Adjustment after Replacing Drum Assembly(Video Heads)

Purpose: To suppress drift in the height relative to the Guide Roller and drift of the X Value after replacing the drum.

Test Equipment/Fixture	Test Equipment Connection Points	VCR State	Adjustment Points
● Oscilloscope ● Post Height Adjusting Driver ● Alignment tape ● Blank tape ● M3 Nut Driver	Checking the flatness ● CH-1: PB RF Envelope ● CH-2: SW 30Hz ● Head Switching Output Point ● RF Envelope Output Point	● Run the blank tape ● Play an alignment tape	● Guide Rollers Precise Adjustment ● Switching point ● Tracking point ● X-Value

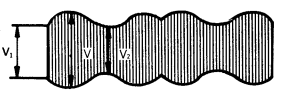
Connection Diagram



Checking/Adjustment Procedure

1) Run the blank tape, check and adjust whether the Roller Guide is curling or creasing tape around the Roller Guide.
2) Check the RF envelope output flatness and adjust the Roller Guide Height while playing an alignment tape.
3) Adjust the head switching point.
4) Check that RF envelope output is maximum when the tracking is at the center click position.
5) Adjust the Tracking Preset and X-Value Adjust with X Adjust.

Waveform Diagram



V_1/V MAX $\geq$ 0.7
V_2/V MAX $\geq$ 0.8
RF ENVELOPE OUTPUT

Fig. C-10

11. Maintenance/Inspection Procedure

(1) Required Maintenance

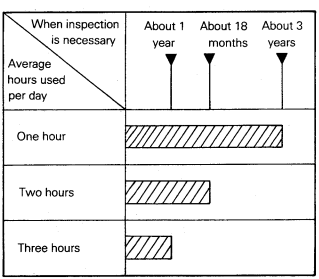
The recording density of a VCR is much higher than that of an audio tape recorder. VCR components must be very precise, at tolerances of 1/1000mm, to ensure compatiblity with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, are necessary.

(2) Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR, and the environment in which the VCR is used.

But, in general home use, a good picture will be maintained if the inspection and maintenance is made every 1,000hours. The table below shows the relation between time used and inspection period.

Table 1



(3) Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.

Check with the customer to find out how often the unit is used, and then determine that the unit is ready for in spection and maintenance. Check the following parts.

Table 2

Phenomenon	Inspection
Poor S/N, no color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, belt or flywheel belt
Vertical jitter, horizontal jitter	Dirt on video head or in tape transport system
Color beats	Dirt on full-erase head
Low volume or sound distorted	Dirt on audio/control head
Fast forward or rewind is not done or rotation is slow	Dirt on belt

(4) Supplies Required for Inspection and Maintenance

(1) Greases Kanto G-31(or equivalent)
(2) Alcohol(or freon)
(3) Cleaning Patches

5) Maintenance Procedure

5-1) Cleaning

(1) Cleaning video head

First use a cleaning tape. If dirt on head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with alcohol or freon to the point indicated. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.

(Do not move the cleaning patch vertically and make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)

Thoroughly dry the head. Then run test tape. If alcohol or freon remains on the video head, the tape may be damaged when it comes into contact with the head surface.

(2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with alcohol of freon.

Note:

① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which move the tape.

② Make sure that during cleaning you do not touch the tape transport system with the tip of a screw driver and no force is applied to the system that would cause deforming.

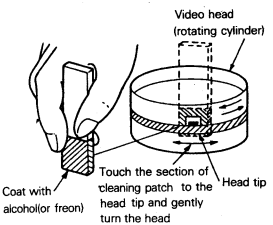


Fig. C-11-1

5-2) Greasing

(1) Greasing guidelines

Apply grease, with a cleaning patch. Do not use excess grease. It may come into contact with the tape transport of drive system. Wipe any excess and clean with cleaning patch wetted in alcohol or freon.

(2) Periodic greasing

Grease specified locations every 5,000hours.

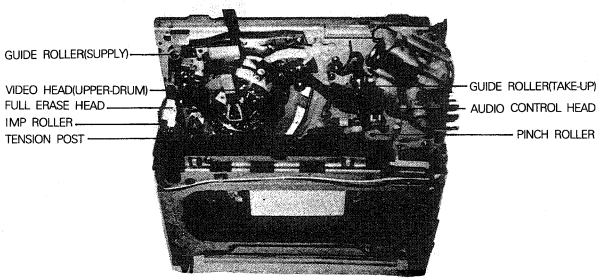


Fig. C-11-2 Tape Transport System

Phenomenon	Inspection	Replacement	
Color beats	Dirt on full-erase head	○	→ ①
Poor S/N no color	Dirt on video head	○	→ ②
Vertical jitter	Dirt on video head Dirt in tape transport system	○	→ ③
Low volume, Sound distorted	Dirt on audio/control head	○	→ ④
Tape does not run Tape is slack	Dirt on pinch roller	○	→ ⑤

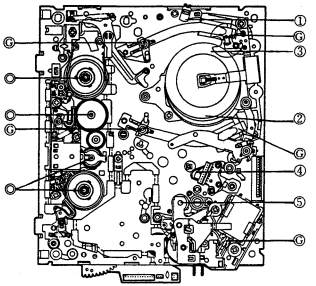


Fig. A-12 Top View of Mechanism

Phenomenon	Inspection Location	Replacement	
Do not fast forward or rewind, or rotation is slow Tape does not run Slack tape	Dirt on reel belt	○	→ ⑥

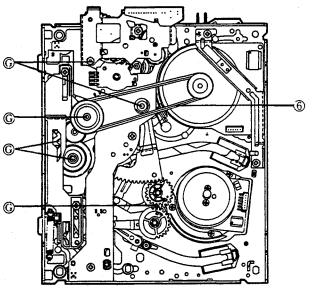


Fig. A-13 Bottom View of Mechanism

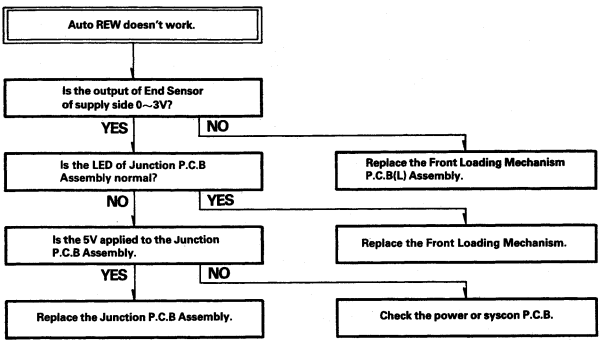
⑥:Grease

Note: If locations marked with ○ do not operate normally after cleaning, check for wear and replace. See the EXPLODED VIEWS at the end of this manual as well as the above illustrations for the sections to be lubricated and greased.

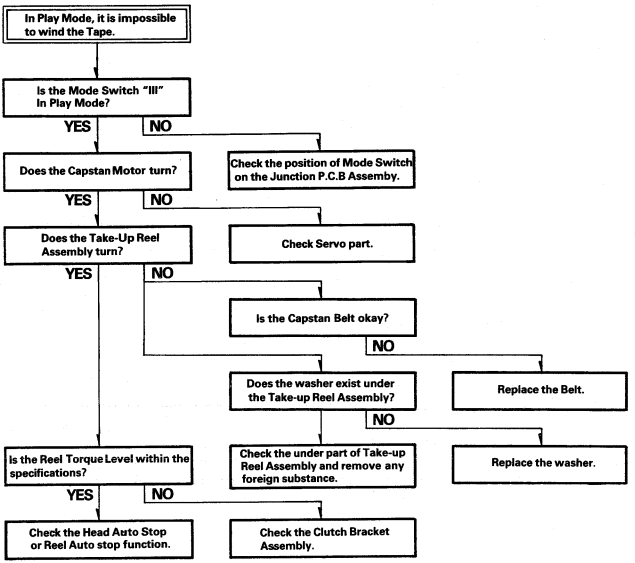
MECHANISM TROUBLESHOOTING GUIDE

1. Deck Mechanism

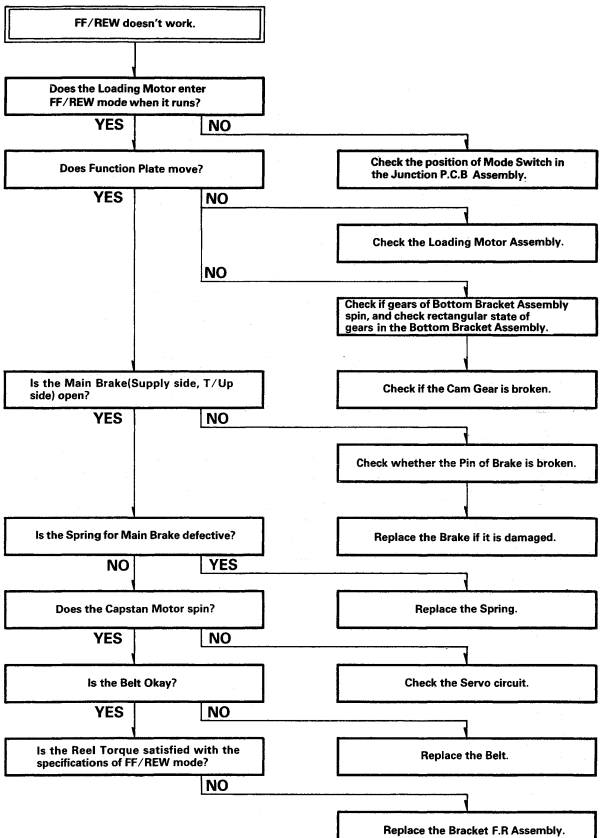
A.


Auto REW doesn't work.
Is the output of End Sensor of supply side 0~3V?
YES
NO
Is the LED of Junction P.C.B Assembly normal?
Replace the Front Loading Mechanism P.C.B(L) Assembly.
NO
YES
Is the 5V applied to the Junction P.C.B Assembly.
Replace the Front Loading Mechanism.
YES
NO
Replace the Junction P.C.B Assembly.
Check the power or syscon P.C.B.

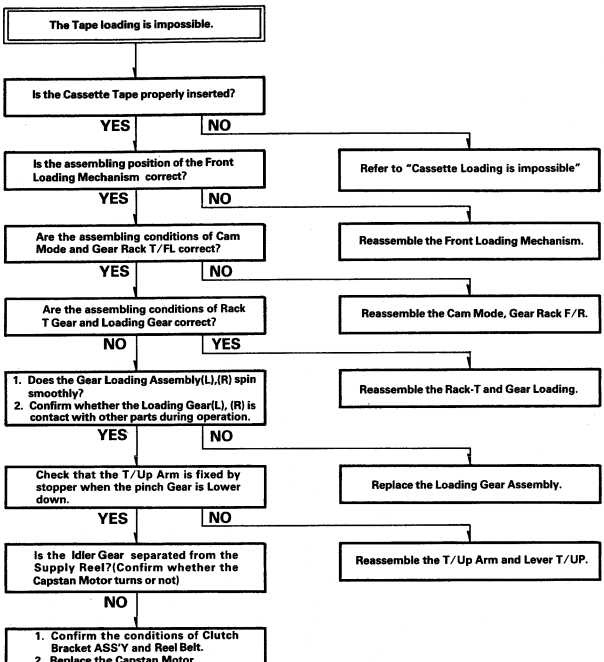
B.


In Play Mode, it is impossible to wind the Tape.
Is the Mode Switch "III" In Play Mode?
YES
NO
Does the Capstan Motor turn?
Check the position of Mode Switch on the Junction P.C.B Assembly.
YES
NO
Does the Take-Up Reel Assembly turn?
Check Servo part.
YES
NO
Is the Capstan Belt okay?
NO
Does the washer exist under the Take-up Reel Assembly?
Replace the Belt.
NO
Is the Reel Torque Level within the specifications?
Check the under part of Take-up Reel Assembly and remove any foreign substance.
Replace the washer.
YES
NO
Check the Head Auto Stop or Reel Auto stop function.
Check the Clutch Bracket Assembly.

C.

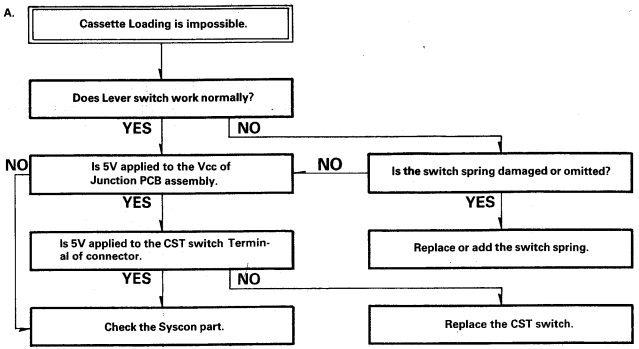

FF/REW doesn't work.
Does the Loading Motor enter FF/REW mode when it runs?
YES
NO
Does Function Plate move?
Check the position of Mode Switch in the Junction P.C.B Assembly.
YES
NO
Check the Loading Motor Assembly.
NO
Check if gears of Bottom Bracket Assembly spin, and check rectangular state of gears in the Bottom Bracket Assembly.
Is the Main Brake(Supply side, T/Up side) open?
Check if the Cam Gear is broken.
YES
NO
Check whether the Pin of Brake is broken.
Is the Spring for Main Brake defective?
Replace the Brake if it is damaged.
NO
YES
Does the Capstan Motor spin?
Replace the Spring.
YES
NO
Is the Belt Okay?
Check the Servo circuit.
YES
NO
Is the Reel Torque satisfied with the specifications of FF/REW mode?
Replace the Belt.
NO
Replace the Bracket F.R Assembly.

D.

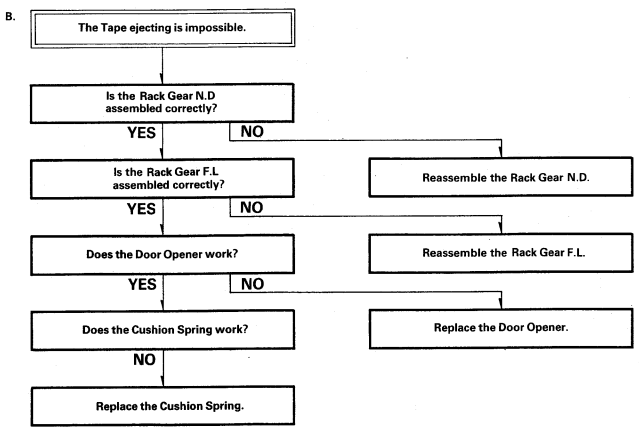

The Tape loading is impossible.
Is the Cassette Tape properly inserted?
YES
NO
Is the assembling position of the Front Loading Mechanism correct?
Refer to "Cassette Loading is impossible"
YES
NO
Are the assembling conditions of Cam Mode and Gear Rack T/FL correct?
Reassemble the Front Loading Mechanism.
YES
NO
Are the assembling conditions of Rack T Gear and Loading Gear correct?
Reassemble the Cam Mode, Gear Rack F/R.
NO
YES
1. Does the Gear Loading Assembly(L),(R) spin smoothly?
2. Confirm whether the Loading Gear(L), (R) is contact with other parts during operation.
Reassemble the Rack-T and Gear Loading.
YES
NO
Check that the T/Up Arm is fixed by stopper when the pinch Gear is Lower down.
Replace the Loading Gear Assembly.
YES
NO
Is the Idler Gear separated from the Supply Reel?(Confirm whether the Capstan Motor turns or not)
Reassemble the T/Up Arm and Lever T/UP.
NO
1. Confirm the conditions of Clutch Bracket ASS'Y and Reel Belt.
2. Replace the Capstan Motor.

2. Front Loading Mechanism

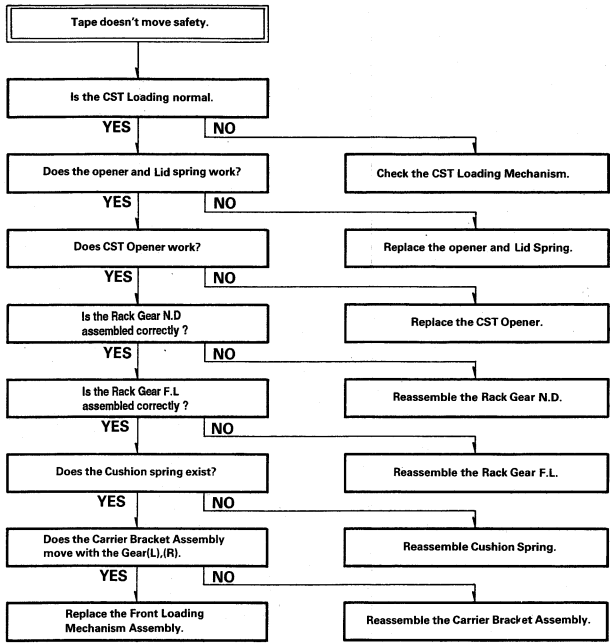
A.



B.



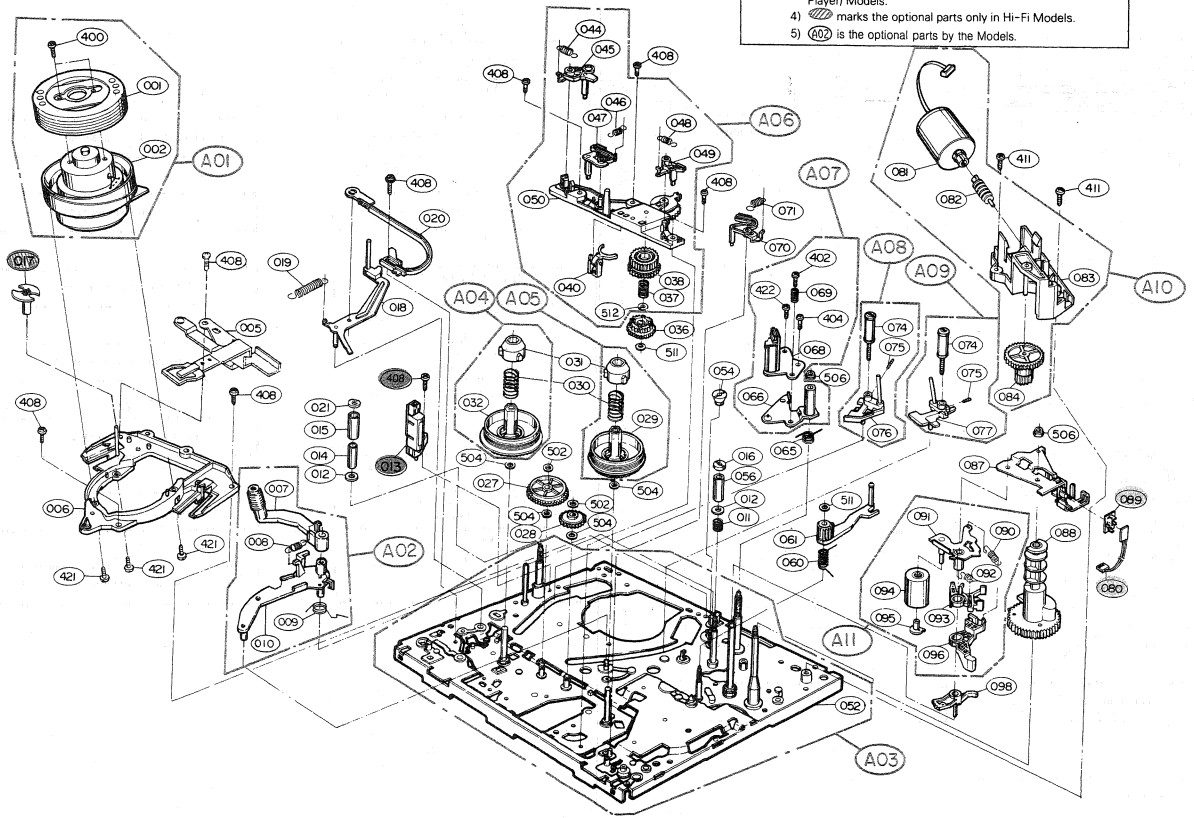
C.



EXPLODED VIEW

1. Moving Mechanism Section(I)

NOTE) 1) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.
2) marks the optional parts only in VCR(Video Cassette Recorders) Models.
3) marks the optional parts only in VCP(Video Cassette Player) Models.
4) marks the optional parts only in Hi-Fi Models.
5) (A02) is the optional parts by the Models.

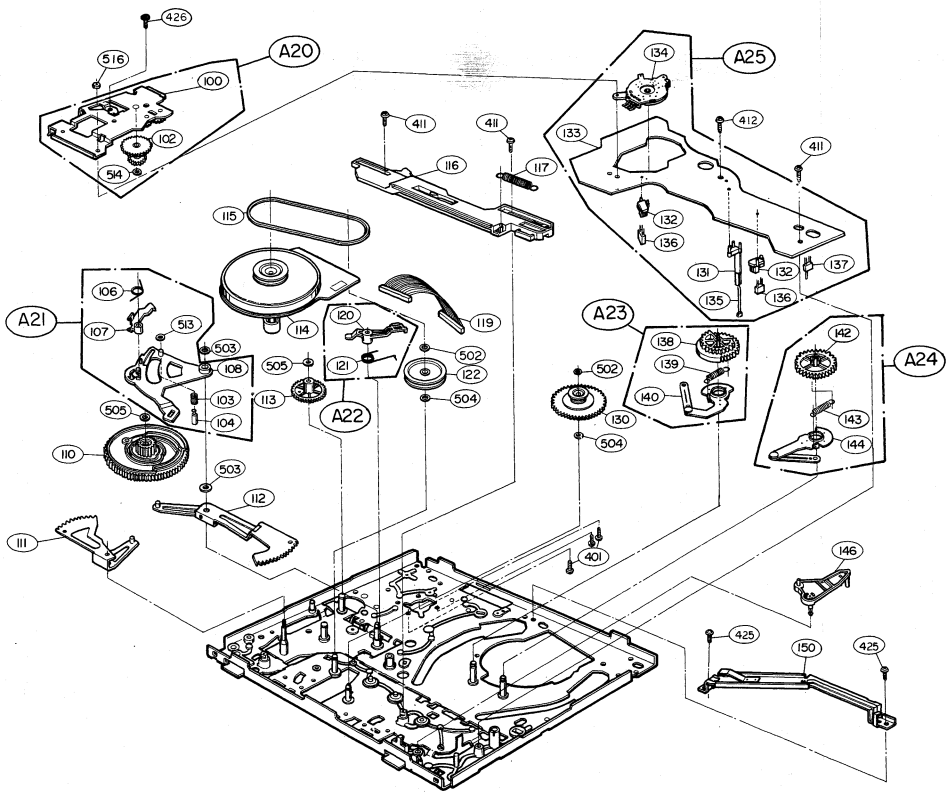


A B C D E F G H

1 2 3 4 5

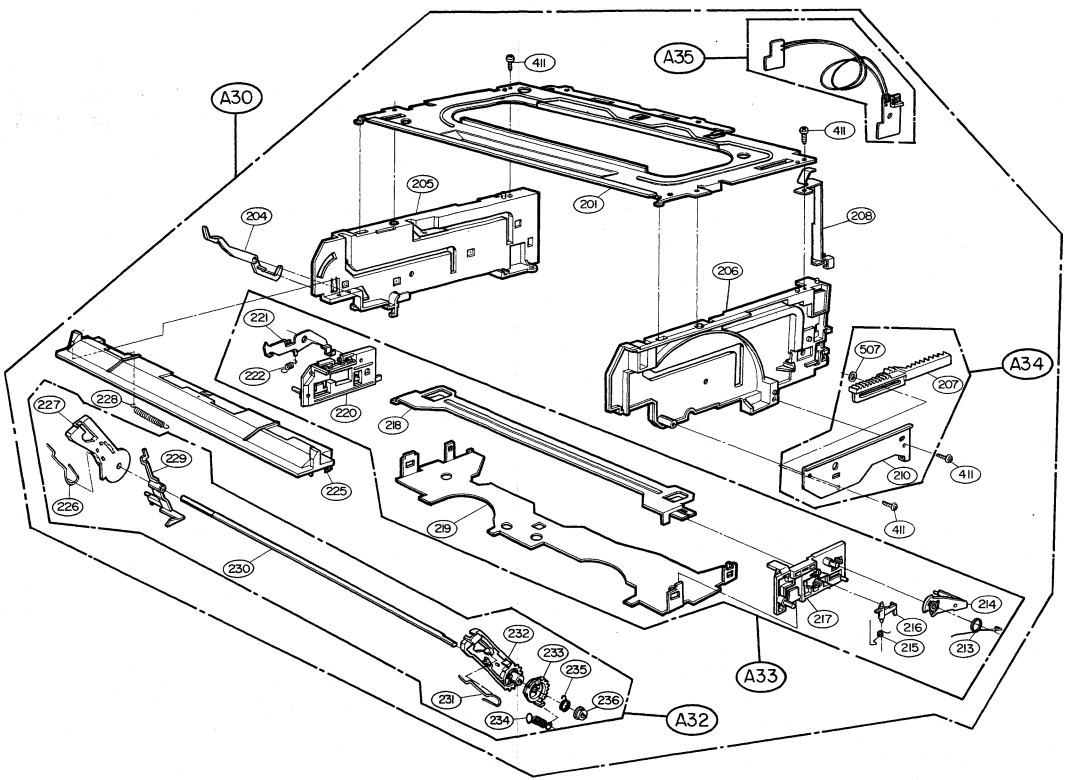
2. Moving Mechanism Section(Ⅱ)

NOTE) 1) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.



3. Front Loading Mechanism Section

NOTE) 1) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.



SECTION 4-2. 8 mm DECK MECHANISM

PERIODICAL CHECK AND MAINTENANCE

For the normal operation and the protection of Tape, the periodical checking and maintaining is required like the unit.
Perform the following steps after the adjustment without the used time.

1. ROTARY DRUM ASSEMBLY CLEANING

Stick the smooth swab moistened with the cleaning water fast to the rotary Drum Slightly, and then rotate the Rotary Upper Drum with a finger to the counter-clockwise slowly.

NOTE :
Be careful so the Motor is not to rotate the Drum and not to rotate to the clockwise. Do not use the swab moistened with the cleaning water to the Head Vertically.

2. TAPE LOADING COURSE CLEANING

Set the Cassette Compartment to the Eject State or remove it, and then wipe the Tape loading Course (No. 1 Guide~No. 7 Guide Capstan Shaft, Pinch Roller) with the Chamois Leather Moistened in cleaning water.

3. DRIVE SYSTEM CLEANING

Wipe the Drive System (Timing Belt, Surface of Reel Table etc.) with the Chamois Leather moistened in cleaning water.

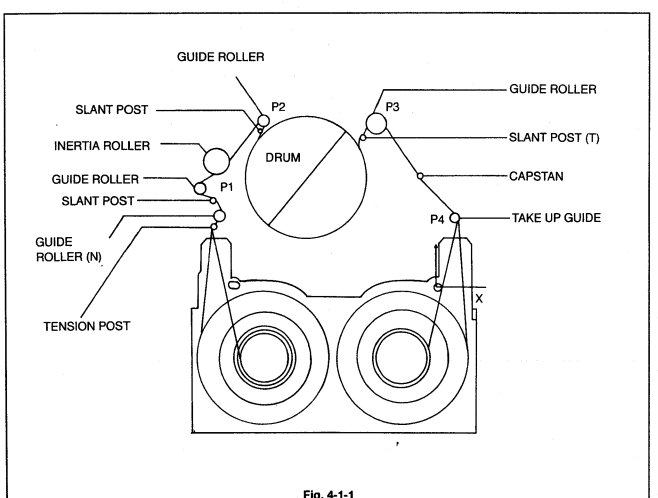


Fig. 4-1-1

4. MAINTENANCE TIME TABLE

○ Cleaning ◎ Oiling ☆ Checking

Check Parts		Time (Hours) (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Cleaning and Demag-netizing	Tape path surfaces Cleaning	○	○	○	○	○	○	○	○	○	○	Be careful about oil
	Rotary drum assembly Cleaning and demagnetizing	○	○	○	○	○	○	○	○	○	○	Be careful about oil
Drive System	Relay belt	–	☆	–	☆	–	☆	–	☆	–	☆	
	Capstan shaft	–	◎	–	◎	–	◎	–	◎	–	◎	Be careful about that the Oil do not drop on the surface of Tape Path
	Idler pulley axle	–	◎	–	◎	–	◎	–	◎	–	◎	
	Loading Motor	–	☆	–	☆	–	☆	–	☆	–	☆	
Perfor-mance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Brake tension Measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD, RVS torque Measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

NOTE :
During checking the Unit, refer the Time Table above for the parts change etc.

Oiling :
- Use the regular Oil always.
  (If the unregular oil is used, the Unit may get demaged.)
- Apply the clean oil on the position used the shaft bearing.
- "Oil 1 drop" means the quantity of degree hanged to the end of 2mm Stick with diameter.
  (Refer to Fig. 4-1-2)

Grease :
- Use the regular Grease.

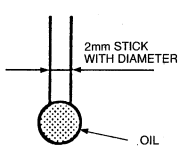


Fig. 4-1-2

DECK MECHANISM DISASSEMBLY AND REASSEMBLY

1. Front Loading Mechanism

1-1. Housing Ass'y Disassembly

1) Disassembly (Fig. 4-2-1)
   (1) Set the unit to the ULC Mode (Unloading Mode).
   (2) Remove 4 Screw(1) on the upper part and then remove the Housing Ass'y CST.

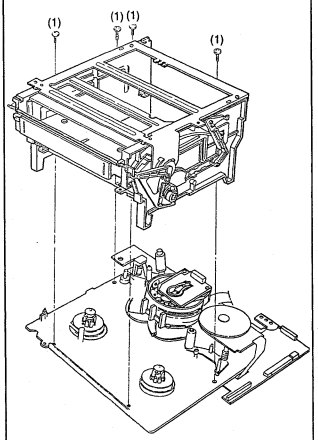


Fig. 4-2-1

2. DC MOTOR (Capstan motor) ASS'Y

2-1. Disassembly (Fig. 4-2-2)

(1) Set the Unit on the ULC Mode (Unloading).
(2) Remove the DC Motor Ass'y by releasing 3 Screws(3) on the lower part of the Chassis.

2-2. Reassembly (Fig. 4-2-2)

(1) Engage the Capstan Gear with the conversion Gear by fixing the 2 Guider bosses and 3 Guider Holes on the Upper part of Chassis into the 2 Guider Holes on the Capstan Gear.
(2) Set the DC Motor Ass'y with 3 Screws(3) on the Lower part of Chassis.

NOTES :

- Use the about 2kgfcm Torque to fix Screw.
- Do not engage with the Gears by forces, because the Capstan Gear is easy to get demaged.
- Stick the DC Motor fast to the Chassis completely.
- Do not touch the Capstan motor Axle, Oil Seal and Rotor.

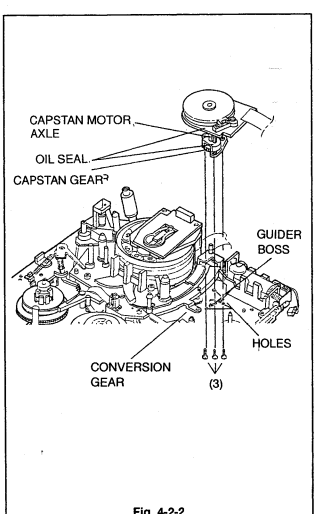


Fig. 4-2-2

3. PINCH ARM ASS'Y AND PINCH LEVER ASS'Y

3-1. Disassembly (Fig. 4-2-3)

(1) Set the Unit to the ULC Mode.
(2) Remove the Pinch Arm Ass'y by removing the stopper Washer.
(3) Remove the Pinch Lever Ass'y.

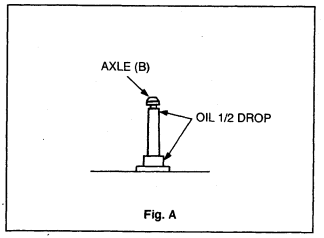


Fig. A

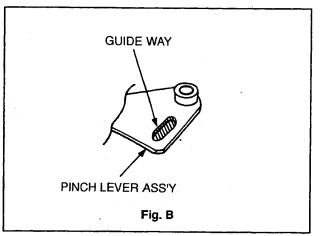


Fig. B

3-2. Reassembly (Fig. 4-2-2, 4-2-3)

(1) Apply Oil 1/2 drop to the Axle(B) 2 point.
(2) Apply greese in the in side of Guide on the Pinch Lever Ass'y (Fig. B).
(3) Stick the Axle(A) of Pinch Lever Ass'y in the Axle B and assemble so the Roller is to be approached to the Guide Way.
(4) Assemble so the Pinch Lever Ass'y pin is sticked in the ⓐ point by inserting the Pinch Arm Ass'y Axle(C) in the Axle (reassembling state).
(5) Set the Stopper Washer.

NOTES :

- Be careful the Nut is not to touch the Rubber Roller when reassembling the Pinch Arm Ass'y to Axle.
- Be careful the object material is not to stain the outer surface of Rubber Roller.

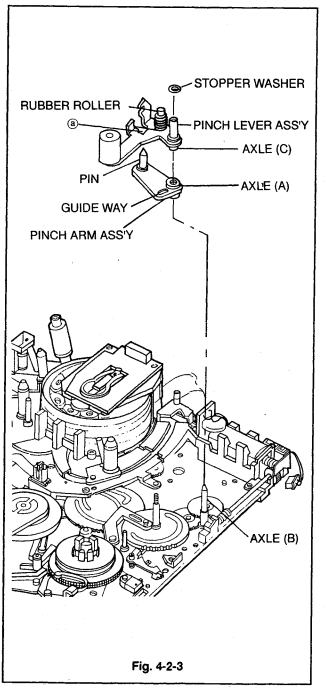


Fig. 4-2-3

4. TAKE UP ARM ASS'Y

4-1. Disassembly (Fig. 4-2-4)

(1) Set the Unit to the ULC Mode.
(2) Remove Nut(A) by using the (-) Driver.
(3) Remove Nut(B) by using the exclusive Driver.
(4) Remove the Slide Washer.
(5) Remove the Take Up Arm Ass'y.
At this time, remove after the Spring Arm ⓐ point is to be supported to the Vertical Bending part ⓑpoint of Take Up Arm Ass'y.
(6) Remove the Spring.

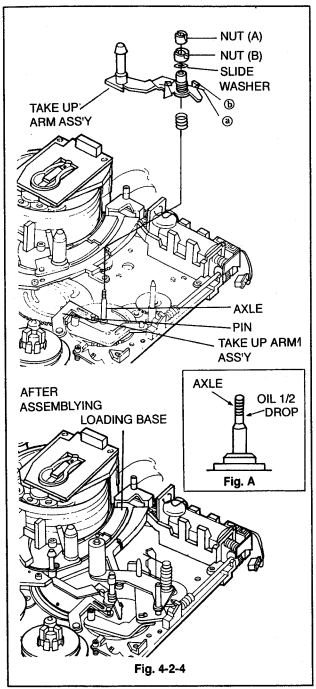


Fig. A

Fig. 4-2-4

4-2. Reassembly (Fig. 4-2-4)

(1) Apply the Oil 1/2 drop on the Axle.
(2) Assembly the Compression Spring, Take Up Arm Ass'y, Slide Waher, Nut(B) and Nut(A) to the Axle.
(3) Strain the Spring Arm ⓐ point of Take Up Arm Ass'y to the front to be stopped by sticking in the in side of Take Up Lever Ass'y Pin.

4-3. Take Up Arm Ass'y Height Adjustment

(1) Adjust to 3mm the height between the Cassette install standard side of Loading Base and the Frange Upper side of Take Up Arm Ass'y.

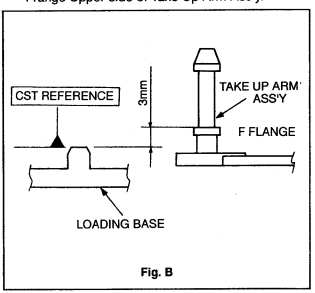


Fig. B

NOTES :

- Do not force the Spring Arm unreassembly during disassembly and reassembly, it may cause the transformation of spring.
- Readjust the Take Path after reassembly.

5. MODE LEVER ASS'Y and TAKE UP LEVER ASS'Y

5-1. Disassembly (Fig. 4-2-5)
(1) Set the Unit to ULC Mode.
(2) Remove the Stopper Washer and then remove the Mode Lever Ass'y.
(3) Remove the Stopper Washer and then remove the Take Up Lever Ass'y.

5-2. Reassembly (Fig. 4-2-4, 4-2-5)
(1) Apply the Grease in the CAM trace ⓐ of Mode Gear.
(2) Apply the Oil 1/2 drop to the Axle.
(3) Stick the Mode Lever Ass'y pin in the CAM trace ⓐ of Mode Gear and then assemble the Mode Lever Ass'y to the Axle(A).
(4) Set the Stopper Washer.
(5) Apply the Oil 1/2 drop to the Axle(B).
(6) Stick the Take Up Lever Ass'y pin in the CAM trace ⓑ of CAM Gear and then assemble the Take Up Lever Ass'y to the Axle.
(7) Set the Stopper Washer.

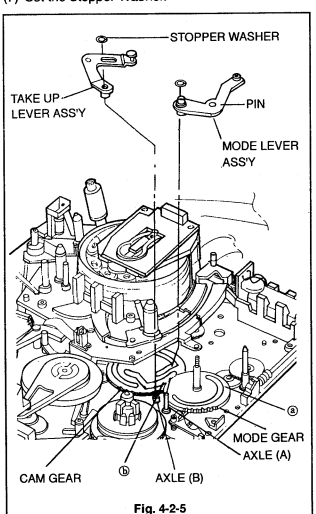


Fig. 4-2-5

6. SOFT BRAKE ASS'Y AND T/BAND PROTECT

6-1. Disassembly (Fig. 4-2-6)
(1) Set the Unit to the ULC Mode.
(2) Hook the Spring Arm point ⓒ stuck in the Vertical Bending part point ⓑ on the Upper part of Chassis to the Spring hanger of Soft Brake Ass'y.
(3) Remove the Stopper Washer and then remove the Soft Brake Ass'y.
(4) Release the Screw and remove the T/Band Protect.

6-2. Reassembly
(1) Stick the T/Band Protect in the Sensor Bracket point ⓐ.
(2) Set the Screw to point ⓐ using the (+) Driver.
(3) Set the Soft Brake Ass'y to the Axle.
(4) Set the Stopper Washer.
(5) Assemble the Spring Arm point ⓒ stuck in the Soft Brake Ass'y supports the Vertical Bending part point ⓑ on the upper part of Chassis.

NOTES :
- Use the about 1.2kgf • cm Torque to fix the T/Band Protect Set Screw.
- Do not force the Spring Arm ⓒ unreassembly, it may cause the transformation of Spring.
- During T/Band Protect assembling, be careful the Reel Ass'y Gear not to be denaged.

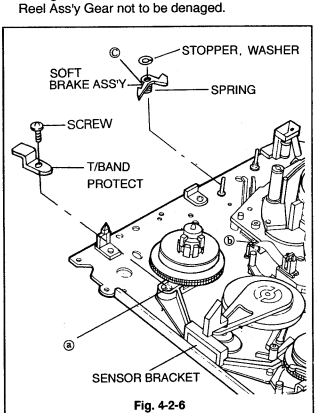


Fig. 4-2-6

7. TENSION REGULATOR ASS'Y AND SLANT ROLLER ARM ASS'Y

7-1. Disassembly (Fig. 4-2-6, 4-2-7)

(1) Set the Unit to the ULC Mode.
(2) Hook the Spring Arm point ⓐ to the Spring Hanger point ⓔ of Slant Roller Arm Ass'y.
(3) Remove the Stopper Washer and the remove the Slant Roller Arm Ass'y.
(4) Remove the Spring Hook of Tension Regulator Ass'y from the Spring Hanger point ⓒ of Bracket.
(5) Remove the Screw using the (+) Drive.
(6) Remove the Stopper Washer and then remove the Tension Regulator Ass'y.
(7) Remove the Slide Washer.

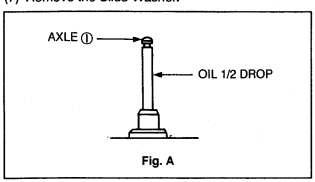


Fig. A

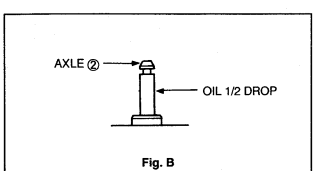


Fig. B

NOTES :

- Be careful so the Band is not to be distarted or folded and the Felt is not to be dirted by an object material during disassembly the Tension Regulator Ass'y.
- Be careful so the Roller surface is not to be dirted by an object material during disassembling the Slant Roller Arm Ass'y.

7-2. Reassembly (Fig. 4-2-7, 4-2-8)

(1) Assemble the Slide Washer to the Axle ②.
(2) Apply the Oil 1/2 drop to the Axle ②.
(3) Assemble the Felt side of T/Band Ass'y with the point ⓕ part of S-Reel Ass'y correctly by sticking the Tension Regulator Ass'y on the Axle.
(4) Assemble the Bracket Guider boss of T/Band Ass'y to accord with the Guide Hole on the upper part of Mechanism Chassis, and then set the Screw.
(5) Assemble the Stopper Washer on the Axle ②.
(6) Put up the Spring Hook at the middle point of Bracket Spring Hanger ⓒ.
(7) Apply the Oil 1/2 drop to the Axle ①.
(8) Assemble the Slant Roller Arm Ass'y on the Axle ①.
(9) Set the Stopper Washer to the Axle ①.
(10) Adjust the position of Tension Regulator FWD.
(11) Put up the Spring Hook ⓑ at the middle Claw of Bracket Spring Hanger ⓒ on the T/Band Ass'y.

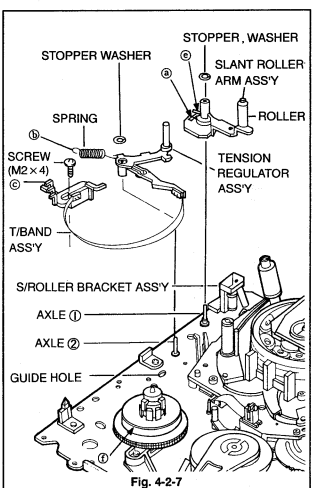


Fig. 4-2-7

NOTES :

- During assembling the Tension Regulator Ass'y, be careful the Band is not to be distorted or folded and the Felt is not to be dirted by an object material.
- Use the about 1.2kgf • cm Torque to fix the Bracket Set Screw.
- During assembling the Slant Roller Arm Ass'y, be careful the Roller surface is not to be dirted by an object material.

8. TENSION REGULATOR FWD POSITION AND BACK TENSION ADJUSTMENTS

8-1. FWD position Adjustment

(1) Set the Unit to the FWD Mode after Loading a Cassette Tape. (Loading make)
(2) Make Sure the gap between the edge of cap on the Tension Regulator Ass'y and the edge of Boss point ⓐ on the Slant Roller Arm Ass'y is 0.5~1mm.
If the gap is over the range, adjust the next step after ejecting the Cassette Tape.
(3) Remove the Set Screw of the Bracket on the T/Band Ass'y.
(4) If the measuring gap is farther than the range, draw the Bracket up to the Direction of arrow Ⓐ, and if the gap is nearer than the range, thrust the Bracket to the direct on of arrow Ⓐ, and then set the Screw.
(5) Check the gap is in the range value by adjusting steps(1), (2) repeatedly.

NOTES :

• Use a Cassette Tape wound about half.

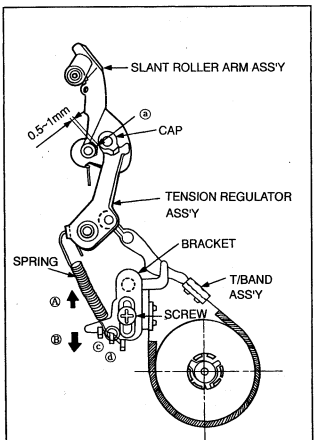


Fig. 4-2-8

8-2. Back Tension Adjustment (Fig. 4-2-8)

(1) Load the Torque Cassette Tape in the Unit and set the Unit to Ope-Mode after step, adjustment. (Forward Play Mode).
(2) Check the Back Tension Torque of the Supply side is in 6.5±2(gf • cm).
(3) Otherwise, adjust the Spring hanger position of Bracket as follows;
(4) If the measurment value is more than the range, put the Spring Hook up to the Hanger ⓒ, and if it is less than the range, put the Spring Hook up to the Hangerⓓ.
(5) Make sure the Back Tension is in the range value by adjusting steps(1), (2) repeatedly.

8-3. Reel Torque Checking

(1) Load the Torque Cassette Tape in the Unit.
(2) Set the Unit to FWD Mode and check the Torque on the T Reel Table is in 12.5±4gf • cm.
(3) Set the Unit to REV Mode and Check the Torque on the S Reel Table is in 12.5±4gf • cm.
(4) Set the Unit REV Mode and Check the Torque on the T Reel Table is in 12.5±4gf • cm.
(5) If each Torque Value is over the range, change the Reel table.

9. WORM GEAR ASS'Y MIDDLE GEAR, TRANS GEAR ASS'Y, LOADING MOTOR ASS'Y AND BRACKET ASS'Y

9-1. Disassembly (Fig. 4-2-9-1, 4-2-9-2)

(1) Remove the Screw for removed the Loading Motor Ass'y (Fig. 2-9-2). At this time, the Worm Gear Ass'y is disassembled simultaneously with the Loading Motor Ass'y ⓐ and Worm Gear Ass'y ⓑ in gear together. (Fig. 4-2-9-1)
(2) Remove the Loading Motor Ass'y and Worm SHAFT Ass'y. (Fig. 4-2-9-1)
(3) Remove the Stopper Washer and remove the Trans Gear Ass'y.
(4) Remove the Stopper Washer and remove the Middle Gear.
(5) Release the Screw to remove the Bracket Ass'y.

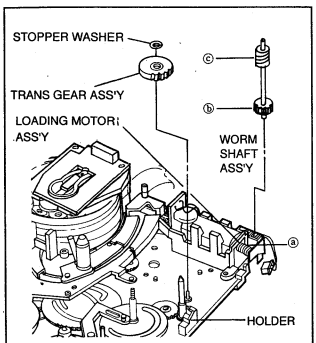


Fig. 4-2-9-1

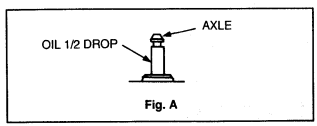


Fig. A

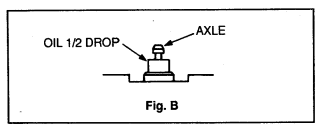


Fig. B

9-2. Reassembly (Fig. 4-2-9-2)

(1) Assemble the Guide Bosses 2 points of Bracket Ass'y to accord with the Guide Holes "ⓐ" and "ⓑ" on the upper part of Mechanism Chassis, and then set the screw.
(2) Apply the Oil 1/2 drop on the Axle.
(3) Go in gear the Mode Gear with Middle Gear by sticking on the Axle.
(4) Set the stopper Washer to the Axle.
(5) Assemble the Guide Bosses 2 points on the Lower part of Loading Motor Ass'y to accord with the Guide Holes "ⓒ" and "ⓓ" on the upper part of Mechanism Chassis and then set the Screw.
(6) After the Gear point ⓑ of Worm Gear Ass'y is to be toward below, stick it into the Gear ⓐ bottom of Loading Motor Ass'y, and fix the Shafe end tip is to be supported to the Loading Motor Bracket first tip, and then assemble the other side of Shaft by pushing from inside of Holder to outside.
(7) Apply the GREASE on the parts. (Fig. C)
(8) Apply the Oil 1/2 drop on the Axle.
(9) Go in gear with the Middle Gear and Worm Gear Ass'y Gear ⓒ together by sticking the Trans Gear Ass'y on the Axle.
(10) Set the Stopper Washer on the Axle.

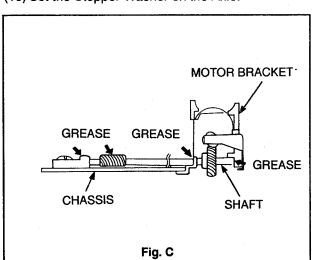


Fig. C

NOTES :

- Do not in gear the Gears by force during disassembly/reassembly of Gear, bited each other.
- During assembling the Bracket Ass'y, be careful the Roller surface is not to be dirted by an object material.
- Use the about 1.2kgf • cm Torque to fix the Screw.

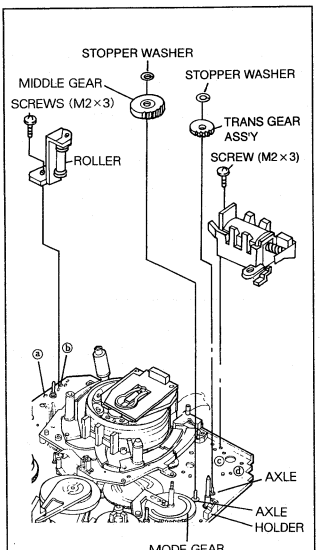


Fig. 4-2-9-2

10. LOADING BASE ASS'Y, MODE GEAR ASS'Y AND EJECT LEVER ASS'Y

10-1. Disassembly (Fig. 4-2-10)

(1) Remove the LED Ass'y from the Led assembly Hole of Loading Base Ass'y.
(2) Remove 3 Screws and then remove the Loading Base Ass'y.
(3) Release the Stopper Washer and remove the Mode Gear Ass'y.
(4) Hook the Spring Arm point ⓐ of Eject Lever Ass'y by pushing to the front to the Spring Hanger of Eject Lever Ass'y.
(5) Remove the Stopper Washer and then remove the Eject Lever Ass'y.

NOTES :

- Be careful the Led Ass'y Hook is not to danage during disassembly the LED Ass'y from the Led assembly Hole of Loading Base Ass'y.

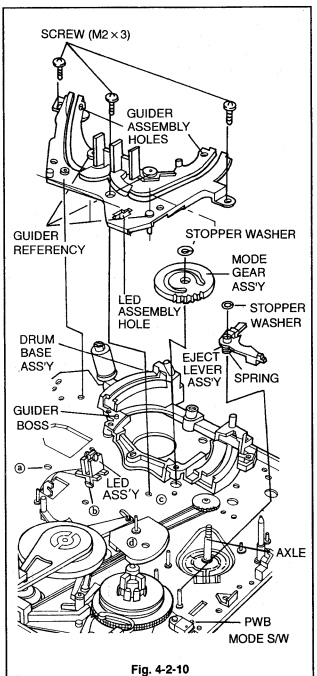


Fig. 4-2-10

10-2. Reassembly (Fig. 4-2-10)

(1) Fix the Guide Basic 4 pins of Loading Basse Ass'y to the refuge holes "ⓐ ", "ⓑ", "ⓒ" and "ⓓ" formed on the upper part of Mechanism Chassis. Stick the Pin into the Gear trace of outer Cam formed on the Cam Gear by pushing the Brake Lever Ass'y slightly in the direction of arrow, and then stick the Guide Basic 4 Pins of Loading Base Ass'y fast to Guide 2 Holes by pressing from above to below. (Fig. A)

(2) Set 3 Screws to "T1", "T2" and "T3" on the upper part of Mechanism Chassis.

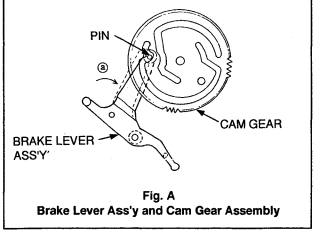


Fig. A
Brake Lever Ass'y and Cam Gear Assembly

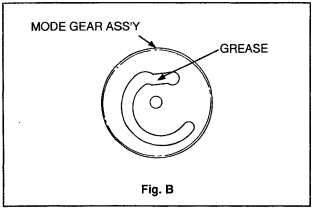


Fig. B

(3) Assemble the Eject Lever Ass'y on the Axle, and Set the Stopper Washer on it.

(4) Wipe the surface of PWB Mode S/W with the cotton stick with the cleanser.

(5) After the cleanser is dried completely, Apply the Grease to the point of contact evenly and thinly.

(6) Apply the Grease on the Mode Gear Ass'y Cam formative parts.

(7) Go in gear the Cam Gear with the Mode Gear Ass'y by sticking on the Axle. (Fig. C)

(Assembly Method)

Go in gear with together so the intaglioed arrow edge to accord on the line connected to the middle of Mode Gear Ass'y and the middle of Cam Gear.

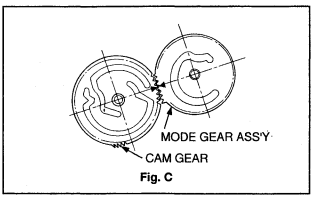


Fig. C

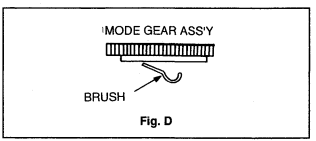


Fig. D

(8) Set the Stopper Washer on the Axle.

(9) Push the Spring Arm point ⓐ of Eject Lever Ass'y from the Spring hanger to below to be supported to the sidewall of CST S/W.

(10) Apply the Grease on the deviant lines of Loading Base Ass'y (Fig. 4-2-11).

(11) Stick the Led Ass'y into the Led Ass'y Hold of Loading Bass Ass'y.

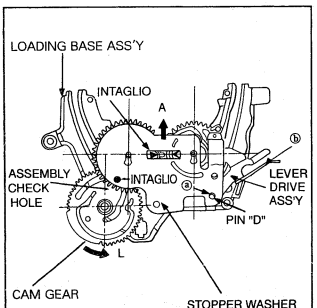
NOTES :

- Use the about 1.2kgf • mm Torque to set 3 Screws.
- Do not force unreasonably, during disassembly and reassembly it may cause the transformation of Gear.
- Be careful so the Roller(S), (T) is not to be dirted by an object material.
- Take the Led Ass'y Hook and Loading Base Ass'y not to be transformed during assembling the Led Ass'y to the Led Ass'y Hole of Loading Base Ass'y.
- Be careful so the Brush on the Lower part is not to be transformed during handling the Mode Gear Ass'y (Fig. D).
- Do not gear in the Mode Gear Ass'y and Cam Gear by force during assembling, the Gear parts may get damaged.
- Take the Spring Arm ⓐ of Eject Lever Ass'y not to be transformed by force.

11. GEAR LOADING ASS'Y(S), (T), SLANT BASE ASS'Y(S), (T), CAM GEAR AND LEVER DRIVE ASS'Y

11-1. Disassembly (Fig. 4-2-11-1, 4-2-11-2)

(1) Turn the Loading Base Ass'y over, and remove the part ⓐ of stopper Plate from Pin "D" by raising and then remove the Stopper Plate by Pushing and raising to "A" direction (to above). (Fig. 4-2-11-1)
(2) Remove the Lever Drive Ass'y from Pin "D" on the Loading Base Sub Ass'y.
(3) Turn the Cam Gear to the "L"direction to stop the rotating. At this time the Slant Base Ass'y(S), (T) also move forward because the Loading Gear Ass'y(S), (T) is rotated (Fig. 4-2-11-3).
(4) Remove the Loading Gear Ass'y(S) and Slant Base Ass'y(S) from the pin "C" on the Loading Base Sub Ass'y.
(5) Remove the Stopper Washer of Loading Gear Ass'y and disassemble the Slant Base Ass'y(S).
(6) Remove the Loading Gear Ass'y(T) and and Slant Base Ass'y(T) from the pin "B" on the Loading Base Sub Ass'y.
(7) Remove the Stopper Washer of Loading Gear Ass'y(T) and disassemble the Slant Base Ass'y (T).
(8) Remove the Stopper Washer from the pin "A" on the Loading Base Sub Ass'y and disassemble the Cam Gear.



THE LOWER PART OF LOADING BASE ASS'Y

Fig. 4-2-11-1

11-2. Reassembly (Fig. 4-2-11-1, 4-2-11-2)

(1) Apply the Oil 1/2 drop on the pin "A" of Loading Base Sub Ass'y. (Fig. 4-2-11-2)
(2) Apply the Grease on the deviant lines of Cam Gear. (Fig. A)
(3) Stick the Cam Gear in the pin "A" of Loading Base Sub Ass'y adn then set the Stopper Washer.
(4) Stick the Slant Base Ass'y(T) and the set theStopper Washer.
(5) Assemble the Cam Gear and Loadilng Gear Ass'y by going in gear together.

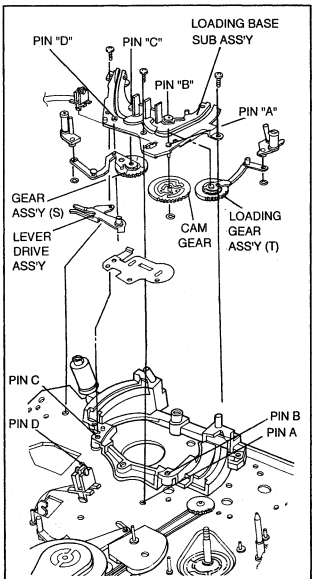


Fig. 4-2-11-2

(Assembly Method)
Apply the Oil 1/2 drop to the Pin "B". Accord the "assembly basic Hole", on the part unformed the teeth pattern by turning the Cam Gear, with the Guider Hole "E" forned on the Loading Base Sub Ass'y.
Fix the Loading Gear Ass'y(T) in the Pin "B". Accord the Guider Hole "F" in the center of cam Gear and Loading Cam Gear.
In the state, fix the little Gear(A) Teeth in the Cam Gear by pushing the Loading Gear Ass'y(T) from the Upside to the lower. (Fig. 2-11-3). And Check the Guider Hole "G" of Loading Gear Ass'y(T) is placed in the straight line between Pin "B" and Pin "C".

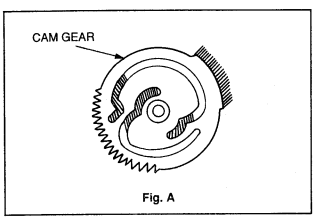


Fig. A

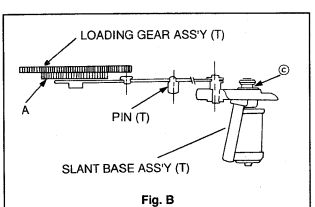


Fig. B

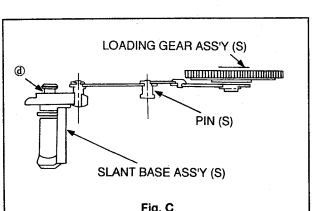


Fig. C

(6) Stick the Pin "T" head of Loading Gear Ass'y(T) in the Guide Way "A" of Loading Base Sub Ass'y. (Fig. 4-2-11-3)
(7) Stick the Slant Base Ass'y(S) in the Lever Hold of Loading Gear Ass'y(S) and Set the Stopper Washer. (Fig. 4-2-11-2)
(8) Apply the Oil 1/2 drop in the Pin "C" of Loading Base Sub Ass'y. (Fig. 4-2-11-2). Go in gear the teeth of Loading Gear Ass'y(S) with the teeth of Loading Gear Ass'y(T).

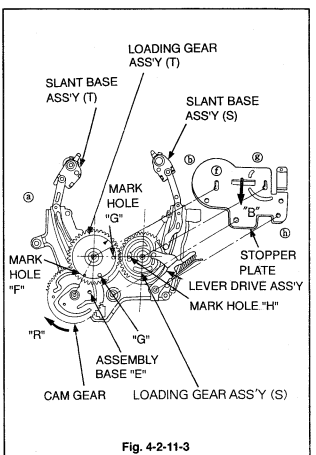


Fig. 4-2-11-3

(Assembly Method)
Fix the Loading Gear Ass'y(S) in the Pin "C" and check the Guide Hole "H" is placed in the straght line between Pin "B" and Pin "C", After Assembly, Pin "B", Guider Hole "G", Guider Hole "H" and Pin "C" are placed on the straight line. (Fig. 4-2-11-3)

(9) Stick the Pin(S) Head of Loading Gear Ass'y(S) in the Guide Way "B" of Loading Base Sub Ass'y. (Fig. 4-2-11-3)
(10) Rotate the Cam Gear to the direction of "R" Stick the part "C" of Slant Base Ass'y(T) and part "D" of Slant Base Ass'y(S) in the Guide Way "A" and "B" of Loading Base Sub Ass'y and then rotate the Cam Gear to the direction of "R" until the rotaty is stopped.
(11) Apply the Grease on the deviant Lines of Cam trace formed on the Gear. (Fig. D)
(12) Apply the Oil 1/2 drop in the Pin "D" of Loading Base Sub Ass'y. (Fig. 4-2-11-3)
(13) During sticking the Lever Drive Ass'y in the Pin "D" of Loading Base Sub Ass'y, stick the Pin "L" of Lever Drive Ass'y in the inside of Cam trace on the Loading Gear(S). (Fig. D, part "E")
(14) Apply the Grease on the deviant Lines of Lever Drive Ass'y. (Fig. 4-2-11-3)
(15) Set the Stopper Plate
(16) Turn the Loading Base Ass'y over, and apply the Grease to the deviant lines of the upper part on the Guide Way.

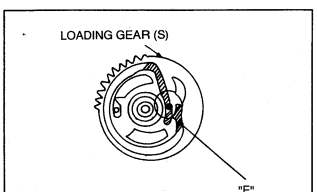


Fig. D

(CHECKING) (Fig. 4-2-11-1)
- Check the Vertical hem of Loading Gear Ass'y(T) negative mark "D" and Loading Gear Ass'y(S) positive mark " " are accorded with each other.
- Check the stopper Plate Guider Hole "I" and Loading Gear Ass'y(T) negative mark "G" are accorded with each other.
- During the checking, if the wrong result is found, adjust the steps above again.

NOTES :
- During the Gears assembly, be careful of the Teeth of Gears get demaged by force.
- Do not force them umreasonably to disassembly and assembly.
- During the Slant and Base Ass'y(C), (T) disassembly and assembly, be careful of the obstruction adhere to the Roller and Post.

12. DRUM BASE ASS'Y AND INERTIA ROLLER ASS'Y

12-1. Disassembly (Fig. 4-2-12) (Fig. A)
(1) Remove 3 Screws and ever remove Drum Base Ass'y.
(2) Remove the Nut.
(3) Remove the Slide Washer, Roller, Sleeve, Lower Flange and Spring.

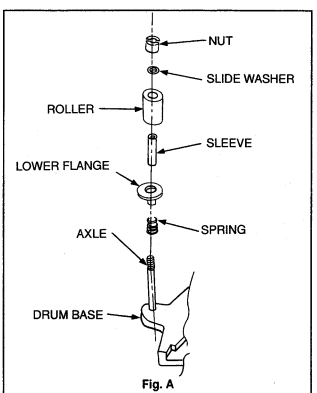


Fig. A

12-2. Reassembly (Fig. 4-2-12) (Fig. A)

(1) Install the Spring, Lower Flange, Sleeve, Roller and Slide Washer on the Axle of Drum Base.
(2) Fix the Axle by rotating the Nut four or six times.
(3) Stick the Guide Bosses 2 point of Drum Base Ass'y in the Boss refuge Holes on the upper part of the Mechanism Chassis from above to below.
(4) Set 3 Screws to fix the Drum Base Ass'y.

NOTES :

- Use the about 2kgf • cm Torque to set Screw.
- Be careful so the Roller surface is not to be dirted during disassembly and assembly.

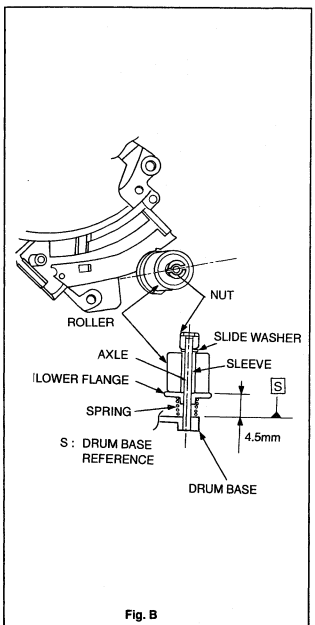


Fig. B

12-3. Roller Height Adjustment (Fig. B)

(1) Adjust the height of Drum Base Lower Side and Lower Frange upper Side by rotating the Nut.

NOTE :

- Readjust the Tape Path after adjustment.

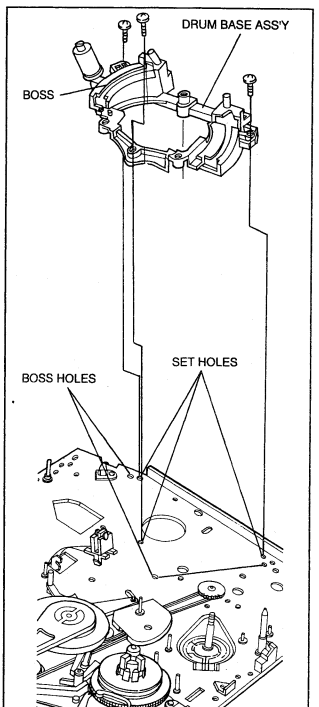


Fig. 4-2-12

13. BRAKE CLUTCH, REEL ASS'Y(S), REEL ASS'Y(T), SENSOR BRACKET, IDLER GEAR ASS'Y AND CAM SPACER

13-1. Disassembly (Fig. 4-2-13)

(1) Remove the Stopper Washer and remove the Brake Clutch.
(2) Remove the Stopper Washer and remove the Slide Washer after disassembly the Reel Ass'y (T).
(3) Remove the Reel Ass'y(S) and then remove the Slide Washer.
(4) Remove the Screw ⓐ and Sensor Bracket.
(5) Disassemble the Idler Gear Ass'y and remove Slide Washer.
(6) Remove the Cam spacer.

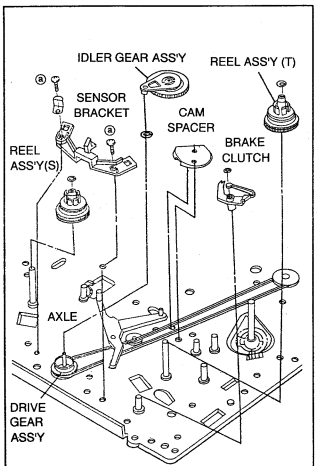


Fig. 4-2-13

13-2. Reassembly (Fig. 4-2-13)

(1) Stick the Guide Bosses 2 point of Cam Spacer in the Guider Bosses 2 point on the upper part of the Mechanism Chassis in the bottom of the Chassis by pushing from above to helow.
(2) Stick the Slide Washer on the Axle and then apply the Oil 1/2 drop and assemble the Idler Gear Ass'y on the Axle. (Flg. A).
During assembling the Idler Gear Ass'y, go in gear the idler Gear teeth with Gear teeth on the upper part of Drive Gear Ass'y.
(3) Stick the Guide Boss 2 point of Sensor Bracket in the Guide Holes 2 point on the upper part of Mechanism Chassis and set right part with Screw.
(4) Push the Spring Arm ⓐ of Brake Reel Ass'y to be supported to the side wall of Sensor Bracket.
(5) Stick the Slide Washer on the Axle and apply the Oil 1/2 drop to the Axle and assemble the Reel Ass'y (S). (Fig. B)
(6) Stick the Slide Washer on the Axle and apply the Oil 1/2 drop to the Axle and assemble the Reel Ass'y(T). (Fig. B)
⇒ Assemble the Reel Ass'y(T) carefully and go in gear the Brake Reel Ass'y teeth with Reel Ass'y (T) teeth by rotating the Lever Brake Ass'y to the direction of "R".
(7) Set the Stopper Washer on the Axle.
(8) Set the Brake Clutch and then the Stopper Washer on the Axle.
⇒ Assemble the bow of Brake Clutch to be Supported to the Side wall of Reel Ass'y(T).

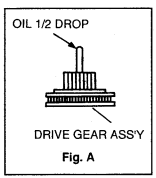


Fig. A

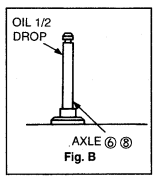


Fig. B

NOTES :

- Be careful so the bow of Brake Clutch is not to be transformed.
- Do not enguage with the Gears by forces, because the Idler Gear is easy to get demaged during the Idler Gear Ass'y.
- Be careful so the teeth is not to get demaged during assembling the Brake Reel Ass'y and Reel Ass'y(T).
- Do not force the Spring Arm unreafonably during the disassembly and reassembly of Spring Arm on the Brake Reel Ass'y, it may cause the transformation of Spring.
- Use the about 1.2kgf • cm Torque to set Screw.

14. BRAKE REEL ASS'Y, LEVER BRAKE ASS'Y, TIMING BELT, IDLER BELT, DRIVE GEAR ASS'Y, CONVERSION GEAR ASS'Y

14-1. Disassembly (Fig. 4-2-14)

(1) Remove the Stopper Washer and remove the Brake Reel Ass'y.
(2) Remove the Timing Belt. Release the Timing Belt stuck in the Idler Belt and then remove the Timing Belt from the Drive Gear Ass'y.
(3) Loosen the Stopper Washer, and remove the Idler Belt and Slide Washer.
(4) Remove the Drive Gear Ass'y and Slide Washer on the Axle.
(5) Loosen the Stopper Washer, and remove the Conversion Gear Ass'y and Slide Washer.

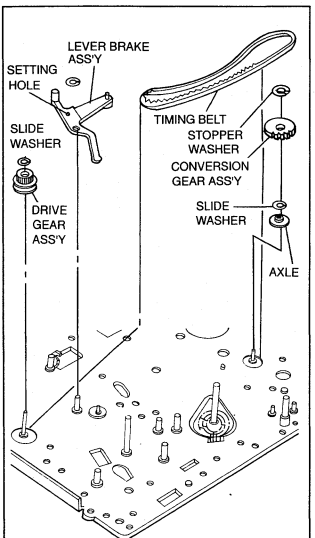


Fig. 4-2-14

14-2. Reaseembly (Fig. 4-2-14)

(1) Stick the slide washer on the Axle and apply the oil 1/2 drop on the Axle. (Fig A)
(2) Assemble the conversion Gear Ass'y on the Axle and set the stop washer.
(3) Assemble the slide wahser on the Axle and apply the oil 1/2 drop on the Axle. (Fig B)
(4) Assemble the Grive Gear Ass'y on the Axle.
(5) Stick the Idler Belt on the Axle and apply the oil 1/2 drop on the Axle.
(6) Assemble the Idler Belt on the Axle and set the stopper wahser.
(7) Assemble the Timing Belt. Hook the Timing Belt on the lower Gear of Conversion Gear Ass'y and assemble the vertical port(no teeth part) on the lower teeth part of Drive Gear Ass'y by hooking on the vertical part of IdlerBelt. (Fig. 4-2-13)
Apply the oil on the teeth of Timing Belt.
(8) Assemble the Lever Brake Ass'y on the Axle and set the stopper washer, and then fit the Guider Hole to the cognition hole by rotating the Lever Brake Ass'y.
(9) Stick the Lever Brake, on the Axle and set the Stopper Washer, At this time, assemble so the part "B" on the Lever Brake Ass'y is to be inserted in the Mouth part "A" on the Brake Reel Ass'y. (Fig. 4-2-13)

NOTE :
Do not force to be transformed unreasonably during the Timing Belt disassembly/assemly.

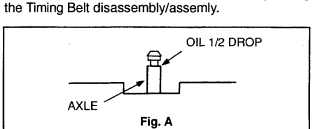


Fig. A

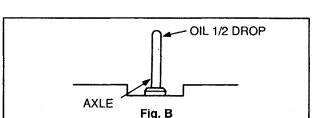


Fig. B

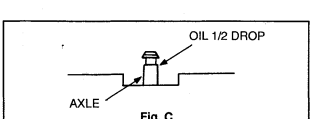


Fig. C

15. DRUM ASS'Y DISASSEMBLY

15-1. Disassembly

(1) Set the Unit to the ULC Mode (Unloading mode).
(2) Remove the Flexible Board and connector.
(3) Loosen the 3 screws on the Lower part of Chassis and remove the Drum Ass'y from the Drum Base Ass'y.

15-2. Reassembly

(1) Fit 2 Guider Bosses formed on the Drum Base Ass'y with the Guider refuge Holde on the Lower part of Drum Ass'y, and then set the Drum Ass'y with 3 screws through the Guide Hole of Drum Base Ass'y on the Lower Part of chassis.
(2) Link the connector to the Flexible Board.

NOTES :

- During the Flexible Board and connector disassembly/assembly, be careful to the Line Cutting or transformation.
- Do not touch the Head Tip.
- Readjust the Tape path of ter assembly.
- Use the about 2kgf • cm Torgue to set screw.

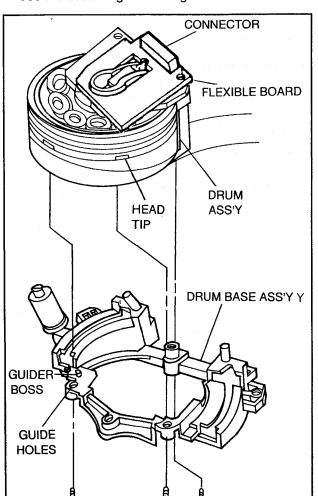


Fig. 4-2-15

16. DRUM DISASSEMBLY

16-1. Disassembly

(1) Loosen 2Screws on the upper part of Drum Ass'y and remove the Motor Ass'y stator.
(2) Remove the lead from the soldering part on the Lower part of Drum Ass'y, and remove the Plate Signal by loosening 1 Screw.
(3) Remove the lead from the PWB Ass'y signal soldering part on the Lower part of Drum Ass'y and remove PWB Ass'y signal.

16-2. Reassembly

(1) Assemble the Drum to fit the PWB Ass'y signal Hole and the Drum Sub Ass'y pin properly, and solder on the soldering part of PWB Ass'y signal.
(2) Assemble the Plate Signal Ground on the Drum Sub Ass'y with 1 screw, an then Solder on the soldery part of Plate signal Ground.
(3) Assemble the Motor Ass'y Stator in the Bracket Stator Hole with 2 screws on the upper part of Drum Sub Ass'y.

NOTES :

- During the parts assembly, do not scratch on the surface of Drum.
- Be careful so the Video Head is not to be damaged.
- Solder carefully after assembling the PWB Ass'y Signal.
- Use the about 2kgf • cm Torgue to set screw.

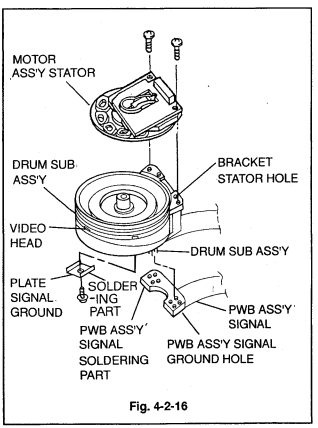


Fig. 4-2-16

17. PCB ASS'Y DECK

17-1. Disassembly

(1) Remove 1 screw (4) and 1 screws (5) on the upper parts of chassis.
(2) Remove the Holder PRE-AMP 8 mm, BRACKET DECK 8mm after release, screw (6) and screw (7).
(3) Remove 3 screw (8) and remove the solder of Mode switch, LED.
(4) Remove the PCB ASS'Y DECK JUNTION.

17-2. Reassembly

Perform the reassembly to the reverse order of assembly above.

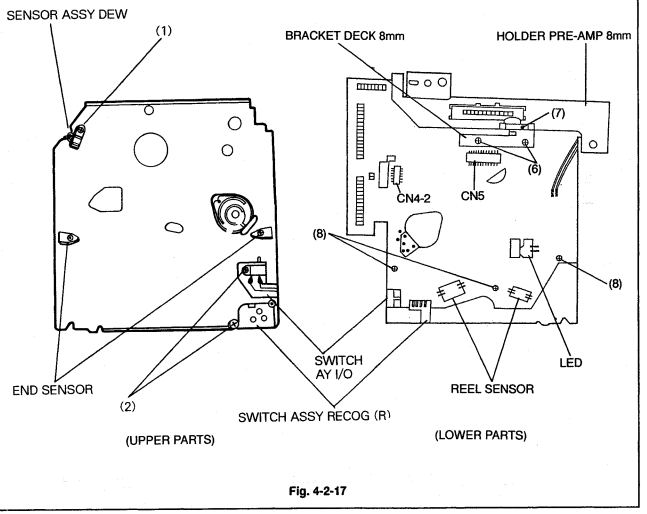


Fig. 4-2-17

DECK MECHANISM ADJUSTMENT

1. DECK LOADING SYSTEM LAY-OUT

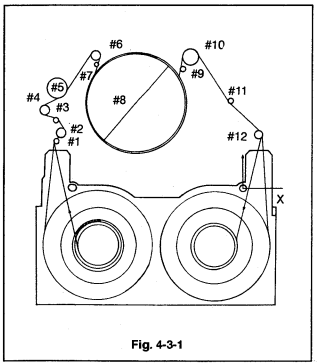


Fig. 4-3-1

#1 : TENSION POST (Ø2)

#2 : GUIDE ROLLER (N) (Ø4)

#3 : SLANT POST (Ø2)

#4 : GUIDE ROLLER (Ø4)

#5 : INERTIA ROLLER (=P1) (Ø8)

#6 : GUIDE ROLLER (S) (=P2) (Ø4)

#7 : SLANT POST (S) (Ø2)

#8 : DRUM (Ø40)

#9 : SLANT POST (T) (Ø2)

#10 : GUIDE ROLLER (T) (=P3) (Ø6)

#11 : CAPSTAN (Ø1.995)

#12 : TAKE UP GUIDE (=P4) (Ø3)

2. PREPARATIONS

① Cleaning water.
② Chanois cloth.
③ Cotton stick
④ Dental mirror.
⑤ Torgue CST Tape, Alignment Tape and PLAY/RECORDING Tape.
⑥ Hexagonal Wrench(0.89mm) or L-Wrench.
⑦ Small(-) Driver⇒P1, P4 Adjustment.
⑧ Loading adjustment stick⇒P2, P3, P4 adjustment.
⑨ Circuit jig for Deck adjustment.

3. LOADING POST FIRST HEIGHT ADJUSTMENT

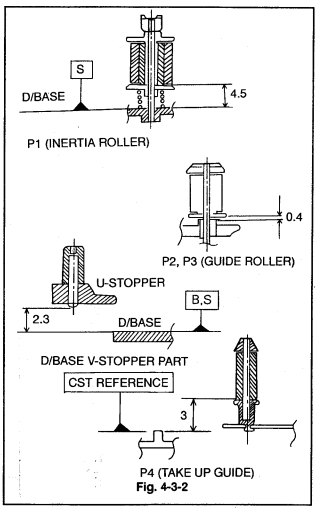


Fig. 4-3-2

4. TENTION ARM POSITION AND BACK TENTION ADJUSTMENT

4-1. Tension Arm position Adjustment

(1) Set the Deck mechanism to the Ope-Mode in No Tape state ⇒using the Circuit Fixture.
(2) Check the gab between ø3 Boss of Arm Slant Roller and Cap of Arm Tension is 0.5~1.0 mm. If the gab is over the range, adjust as follows.
(3) Remove the screw on the Bracket fixing the Band Ass'y.
(4) Set the Bracket to the desired position by pushing to the direction of A or B and then set the screw.

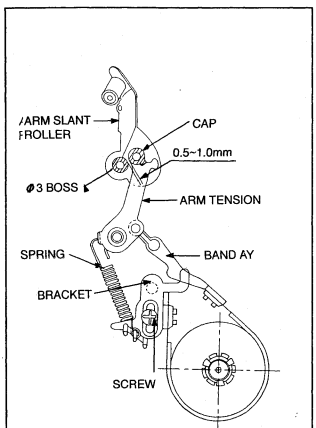


Fig. 4-3-3

4-2. Back Tension Adjustment

(1) After step 4-1 Adjustment, insert the Torgue CST Tape in the Unit and set to the Ope-Mode.
(2) Check the Back Tension Torgue of Supply side is in 6.5±2 (gf-cm).
(3) If the measuring value is more than the range, hook the spring of Bracket to (c), and if the value is less than hook to (D).
(4) Check the Back Tension is in the range by performing the Step 1) and 2) repeatedly.

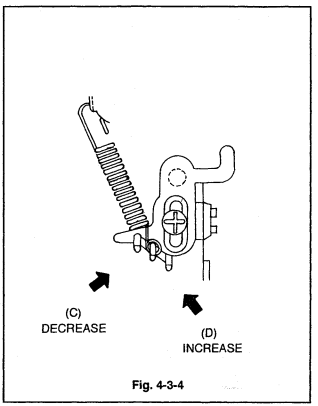


Fig. 4-3-4

1-5. REEL TORQUE CHECK

Inset the Torque CST Tape in the unit and check the spec as follows;

MODE	UNIT	SPEC	REMARKS
OPC CUE	gr · cm	12.5±4	At T/up Reel
REVERSE		35±6	At Supply Reel
REVIEW		12.5±4	At T/up Reel

6. TAPE PATH ADJUSTMENT

The 8mm Video can control the Tape speed instantaneously using the pilot signal, and adjusst very correctly using the ATF(Automatic Track Finding) method, so the adjustment by Tracking control knob is not need. But in case of ATF method, the Tape Path adjustment is difficult. That is, the perfect adjustment is difficult through the ATF method, because it compensates the Head Tracking Error to extent. Therefore, select the Track shift Mode for is possible and the Tracking control is easy. NOTE for P4 Guide (# 12) .

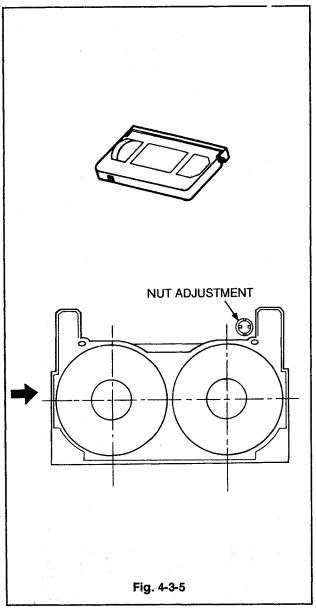


Fig. 4-3-5

6-1. Adjustment preparation

(1) Wipe the Tape path. (Tape Guides, Drum, Capstan Shaft, Pinch Rollor)
(2) Set the oiscilloscope for the Waveform Output.
(3) Play Back the alignment Tape for Tracking control.
(4) Chck the RF Waveform of Oscilloscope in the Entrance/Exit is flat Otherwise, adjust as follows;

• **WAVEFORM**

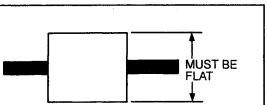


Fig. 4-3-6

6-2. Tracking Control

(1) Playback the Aligment Tape for Tacking contrl.
(2) Using the Running Control stick, rotate the P2-Guide so the waveform of entrance side is to be flatted.
(3) Using the Running control stick, ortate the P3-Guide so the waveform of exit side is to be flatted.

6-3. Tracking Fine Adjustment

(1) Playback the Alignment Tape for Tracking control and set the unit to the Track shift mode.
(2) Check the waveform is flat. Otherwise, roate the P2-Guide and P3-Guide so it is to be flatted.
(3) Set the Lock screw of P2 side using the Hexaponal Wrench 4 L-Wrench, etc. At this time, check the entrance of waveform is not change.
(4) Set the Lock Screw in the P3 side using the hexaponal Wrench 4 L-Wrench, etc. At this time, check the exit side of waveform is not changed.

• **WAVEFORM**

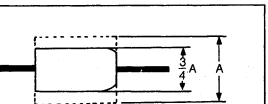


Fig. 4-3-7

6-4. P1-Guide (Inertia Roller) Adjustment

(1) Playback the P6-120MP Tape, and then set the unit to REV Mode.
(2) Check the distortion is occurred in the Lower Flange of P1-Guide. If it appears, bring the Cap of P1-Guide a lower by rotating it to the clock-wise with the driver until the tape is flatted.
(3) Playback the Alignment tape for the Tracking control.
(4) Perform the Tracking Control and Tracking Fine Control.
(5) In the Track Shift state, playback the tape again after CUE/REV. At this time, check the RF Waveform is stabled horizontality in 2secs.
(6) If not, rotate the cap of P1-Guide to an angle of 90 degrees of counter-clockwise and then perform step 5 again.

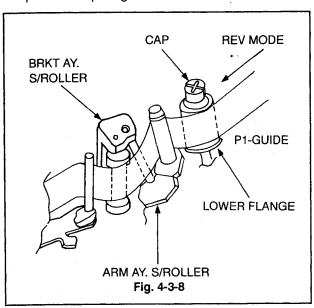


Fig. 4-3-8

NOTES :

① Repeat Step(5),(6) until the normal waveform ranged is become. At this time, if the RF waveform is changed, perform the Track Fine adjustment of Entrance side and then repeat step(5) again.
② Druing FF/REW Mode, check the Curl or Tape Jam are occurred on the # 4 Guide Roller Upper/Lower Flange of Bracket AY, S/Roller.

• WAVEFORM

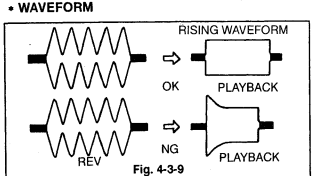


Fig. 4-3-9

6-5. P4-Guide(T/Up Guide) Adjustment

(1) Playback the Alignment Tape for Tracking control and set the unit to the REV-Mode.
(2) Check the Tape transformation is not occurred between the P3-Guide and Capstan Shaft. If it occurrs, rotate the P4-Guide Height Adjustment Cap until the Tape transformation is ridded.
(3) Set the unit to the playback Mode, and then check the Tape transformation is not occurred between the Capstan shaft and P4-Guide(within 0.5mm) If the Tape transformation is more than 0.4mm, adjust the P4-Guide Height unil it is become within 0.5mm.

NOTES :

- When the unit is set to the REV*Mode. it is good adjustment that the transformation between P3-Guide and Capstan Shaft is appeard within 0. 3mm.
- The Upper/Lower Tape Tension distribution in the P2,P3-Guide must be as follows;

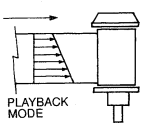


Fig. 4-3-10

6-6. CUE/REV Waveform check

(1) Playback the Alignment Tape for Tracking control and then set the unit to the REV Mode. Check the top of each waveform is sustained with the regular width of 5 or more than 5. Otherwise, perform Item 6-3.
(2) Set the unit to the CUE-Mode. Check otherwise, perform Item 6-3.

• WAVEFORM

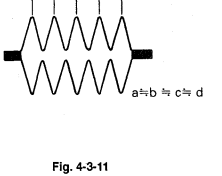


Fig. 4-3-11

6-7. Check after Adjustment

(1) Tracking Check

1) Check the width of RF Wavefrom is reduced to about 3/4 when do the unit set to the Track Shift position.

• WAVEFORM

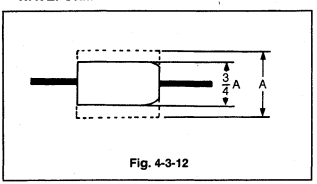


Fig. 4-3-12

2) Check the Minimum width (Emin) is the 65% of Maximum Width (Emax) or more than 65%.

• WAVEFORM

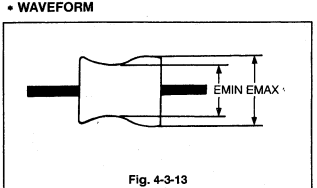


Fig. 4-3-13

3) Check the Waveform is not changed greatly.

(2) Rising Check

1) Playback an Alignment Tape for Tracking Control.

• WAVEFORM

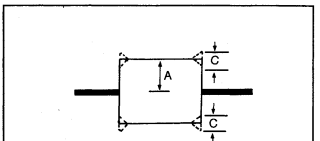


Fig. 4-3-14

2) Release the Tracking Shift State.
3) Unload the tape and load again.
4) Set the Unit to the PLAY mode and check the RF Waveform is stabilized within 2 Secs, horizontally, Also, check the tape is distorted around the Pinch Roller.
5) Set the Unit to the CUE/REV and FF/REW modes and then playing back again, check the RF Waveform is stabilized within 2 Secs, horizontally, Also, check the tape is distorted around the Pinch Roller.
6) Check the process from 3) to 5) repeatedly.

(3) TAPE PATH Adjustment

1) Playback the P_6-120MP (NTSC) or P_5-90MP (PAL) Cassette Tape.
Check the Tape gets on or the Tape folded state is within 0.3mm in the following flanges;
① Upper and Lower Flange of #2 Guide.
② Lower Flange of #5 P1-Guide
③ Upper Flange of #6 P2-Guide
④ Upper Flange of #10 P3-Guide
⑤ Upper and Lower Flange of #12 P4-Guide

2) During Playback Mode, press the FF key to set CUE Mode or press the REW key to set REV Mode, and at this time, check the Tape gets on or the Tape folded state is within 0. 3mm in the following flages.

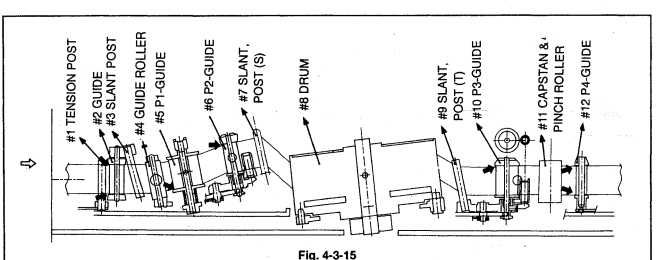
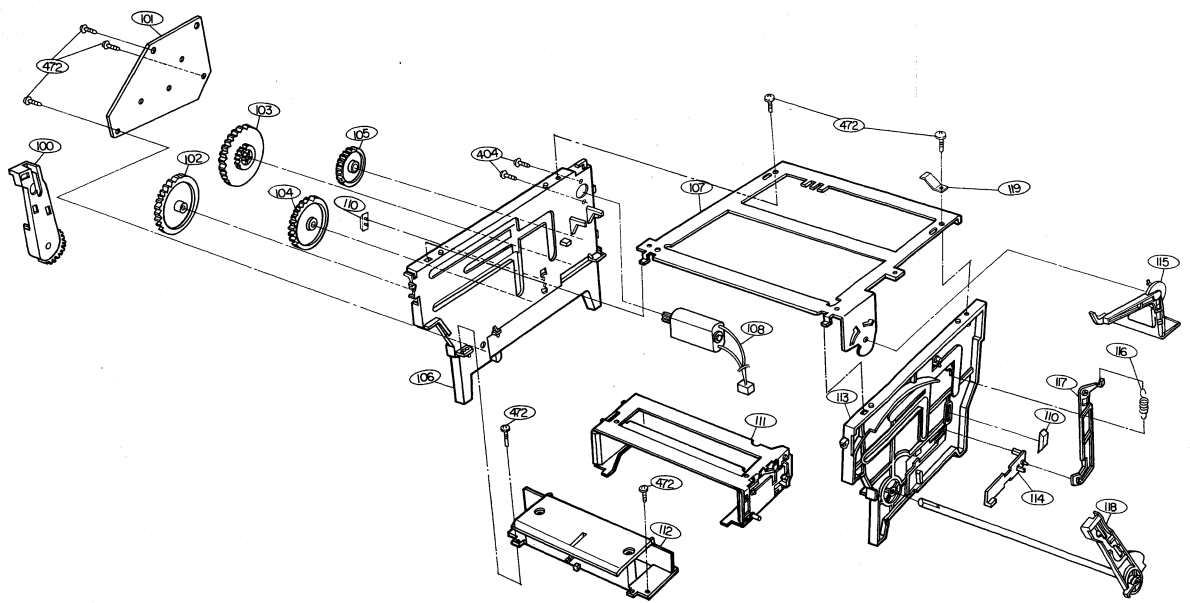


Fig. 4-3-15

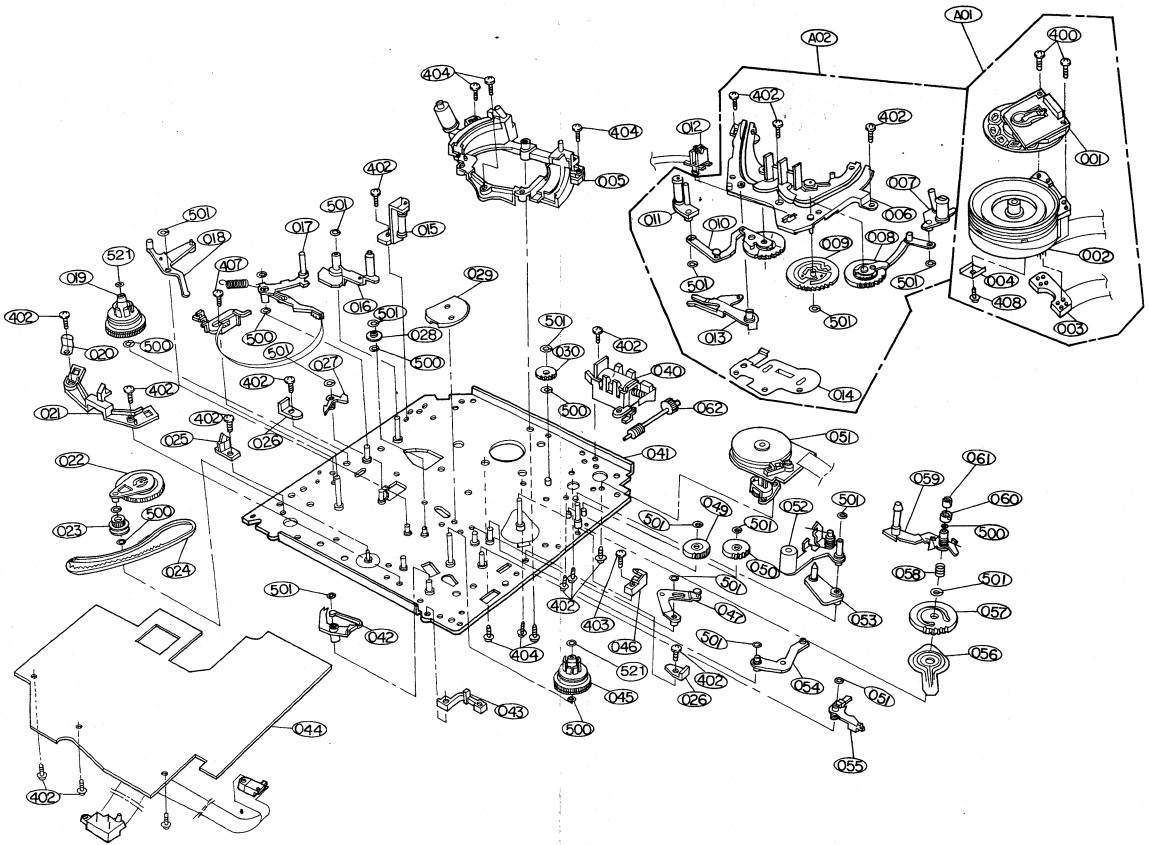
4. EXPLODED VIEW

4-1. CASSETTE HOUSING SECTION

NOTE) 1) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.



4-2. CHASSIS MECHANISM SECTION



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FÜR DIE WERKSTATT

Service Video

OC 2508

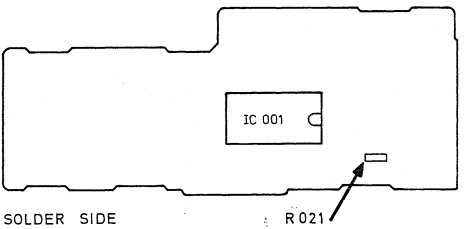
Nr. 94/11

September 1994

Problem: Dropouts bei Hi 8-Wiedergabe.

Ursache: Bedingt durch Toleranzen des Kopfverstärkers, unterschiedliches Bandmaterial und zu geringem Schreibstrom des Aufnahme-Camcorders, kann der FM-Begrenzerverstärker nicht ausreichend angesteuert werden und es entstehen nur bei Hi 8-Wiedergabe Dropouts bzw. Kantenausreißen.

Abhilfe: Erhöhung des FM-Pegels durch Änderung von R 021, 560 Ohm in 1,2 kOhm (handelsüblich 1/8 Watt) im Kopfverstärker 8 mm.
Der 8 mm Kopfverstärker befindet sich hinter dem 8 mm Laufwerk und ist mit 2 Schrauben befestigt. Zum Ausbau muß erst die VHS-Hauptplatte losgeschraubt und hochgeklappt und der Stecker vom 8 mm Kopfmotor abgezogen werden.



Widerstand ändern und Kopfverstärker wieder einbauen, Stecker auf Kopfmotor aufstecken.

Hinweis: Der 8 mm-Teil arbeitet auch bei aufgeklappter VHS-Platte.

Loewe Opta GmbH
Service und VT-Logistik
Technische Information

Loewe Opta GmbH.
96305 Kronach . Postfach 1554
96317 Kronach . Industriestraße 11
Telefon (0 92 61) 99-0
Telefax 0 92 61/9 97 30
Bildschirmtext *50705 # (Info)
*50705990 # (ET-Best.)

231-90545.913

MEMO

Ersatzteilbestellung:	
Btx:	*50705990#
Fax:	0 92 61/9 94 13
Telefon:	0 92 61/9 94 22

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Btx:	*50705814#
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LOEWE. SERVICE EUROPA

BENELUX
LOEWE OPTA Belgium N.V./S.A.
Luitenant Lippenslaan 54 B
B-2140 Antwerpen
Tel. 03-2 35 22 07
Fax 03-2 35 48 37

LOEWE Opta Nederland B.V.
Ravenswade, 54 A 1
NL - 3439 LD Nieuwegein (Utrecht)
Tel. 0 30-803773
Fax 0 30-803773

DÄNEMARK
TENCO Aps
Ahlgade 14
DK-4300 Holbaek
Tel. 0 59-44 30 35
Fax 0 59-44 35 96

DEUTSCHLAND
LOEWE OPTA GmbH
Kundendienst-Zentrale
96305 Kronach • Postfach 1554
96317 Kronach • Industriestraße 11
Tel. 0 92 61/9 91 Tlx. 642 666
Telefax: 0 92 61/9 94 13 Btx: *50705 #
Btx-Tln.-Nr. 0 92 61 99

FRANKREICH
Loewe Opta France S.A.
16-18 Rue des Oliviers, Senia 704
F-94657 Thiais Cedex
Tel. 01-46 75 90 60
Fax 01-46 75 96 87

GRIECHENLAND
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Loewe Opta Italiana S.R.L.
Centro Commerciale Verona Est
Viale del Lavoro, 43
I - 37036 San Martino Buon Albergo (VR)
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P.O. Boks 65
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ÖSTERREICH
Loewe Opta Ges. mbH
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Archbishop Makarios III
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CY- Nicosia
Tel. 02-44 34 96
Fax 02-46 42 12

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Subject to modification
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490-526G
Printed by: Schaltungsdienst Lange,
D-12277 Berlin